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OCTOBER, 1896.

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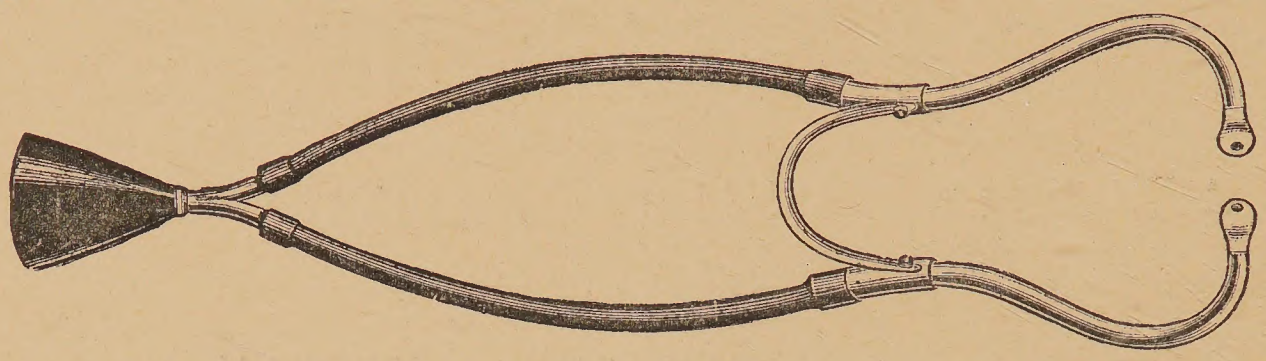

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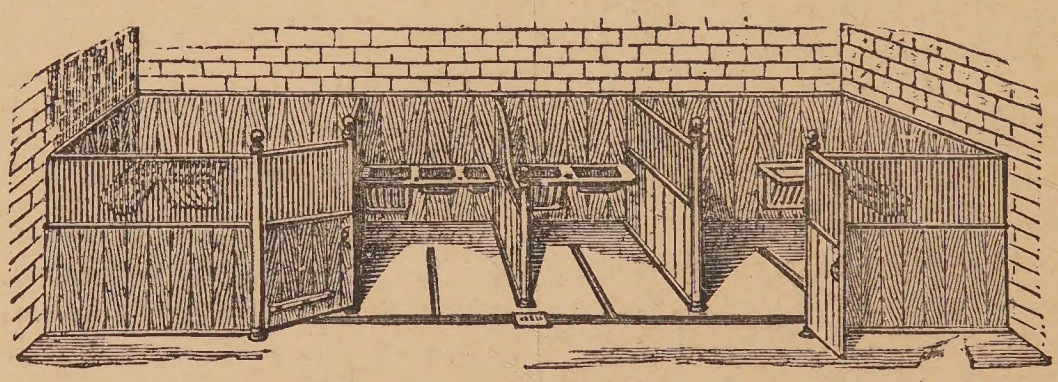

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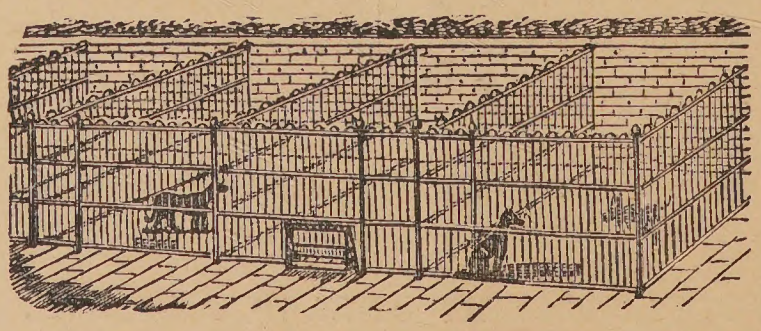

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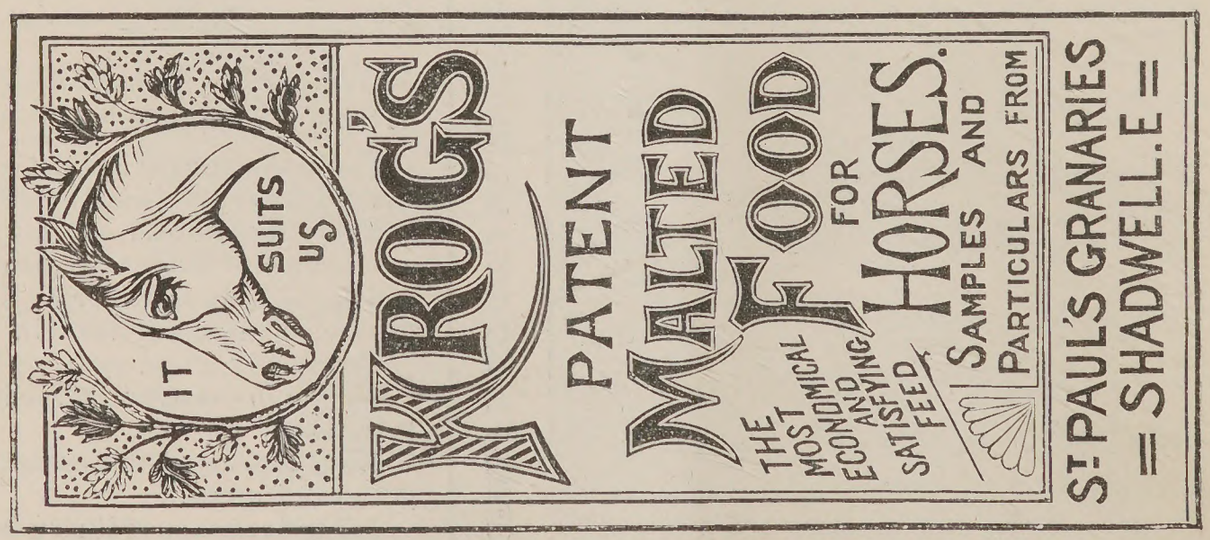

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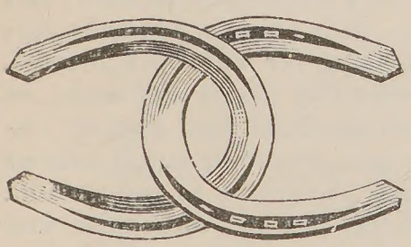

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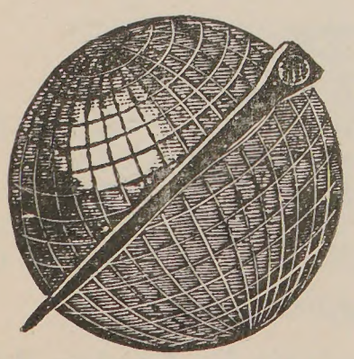

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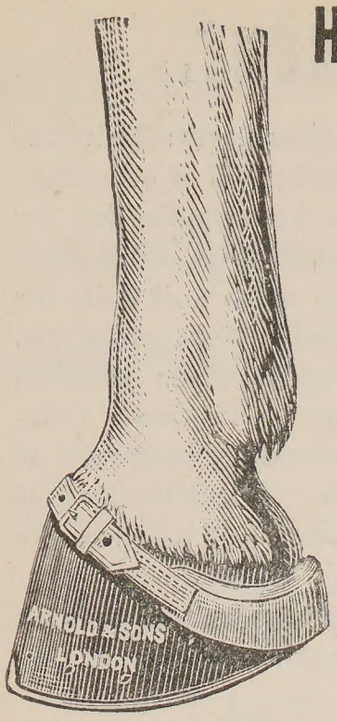

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Original Papers.

THE INFLUENCE OF HEREDITY IN DISEASE.*

By Professor Dewar, F.R.C.V.S.

In thinking of a subject that might prove interesting to busy practitioners, the subject of heredity and the influence it has in disease occurred to me as deserving some consideration.

At the present time heredity as a predisposing cause of disease is not so generally accepted as it was some years ago. We are all getting so learned, so scientific, so sceptical of accepting as fact anything that is not capable of absolute proof. Instead of looking on heredity as an important ætiological factor in disease, it is looked on by many as a convenient term to use in getting out of a difficulty without having to acknowledge our ignorance. Our modern scientific man expects a positive demonstration before he will accept an alleged cause for a disease. So many diseases have in recent years been found to be due to microbes that a specific definite cause is now naturally looked for. It cannot satisfy an inquiring mind to be told that a disease is due to the east wind, or to a sudden change in the barometer. Something definite is required, and the search for micro-organisms is being prosecuted all over the scientific world with even more assiduity than ever.

* Read at the meeting of the South Durham and North Yorkshire Veterinary Medical Society.

Notwithstanding all this, I am firmly convinced that heredity frequently exercises a powerful influence in the causation of disease.

Then what is "heredity"? It is difficult to give a strictly accurate definition of the word, and perhaps no two writers on the subject are altogether in agreement regarding it. But generally speaking it is understood as "that property by which qualities and characteristics are transmitted from parent to offspring." How or why they are transmitted it is beyond the scope of this paper to inquire. But I am tempted to say that we do not know.

Darwin's theory of "pangenesis," and Weismann's theory of "the continuity of the germ plasm," and all other theories are little more than plausible hypotheses,—a begging of the whole question. It is simply a natural law that "like begets like" as a general rule. This we know from observation and experience. How it is we can tell as little as we can why the union of two given animal cells should develop into a sheep, while other two apparently similar cells become developed into a goat—except that they develop in the likeness of their progenitors.

That "like begets like" generation after generation down through the ages, is a truism that no one disputes. Yet the whole theory of evolution is built upon the fact that change does occur. It certainly occurs slowly, and may take cycles of ages before a distinct alteration becomes permanent in one of the higher species. But through the mixing of the materials in the union of the sperm-cell and the germ-cell, through association or environment, through natural selection or the survival of the fittest, animal organisms become materially modified. Had this not been the case the efforts of agriculturists to improve the breeds of our domestic animals would have been almost hopeless. Our Bakewells, our Collings, and our Cruickshanks would have struggled much less successfully to make our sheep and cattle more useful and more profitable than they have done.

Upon this same aphorism, "like begets like," are founded all our stud and herd books. It is that and that alone which gives value to pedigree, and the longer continued the series of progenitors of the same type, the more certain is the offspring to adhere to that type. This is a well-recognised fact, and I have seen it given too much consideration. I remember a shorthorn breeder showing me a cow he had recently bought at nearly three figures, and his reason for buying her was because she was full sister

to a particularly fine cow that had been sold for nearly 600 guineas. He held that having exactly the same pedigree she was likely to breed nearly as well as her sister. Alas! she was never worth anything, and before that time had, I believe, the germs of tuberculosis in her system.

On the other hand, I remember a bull, a most magnificent animal, that had taken first prizes at the Royal English and the Highland Society's shows, which was used in a herd that has since become of world-wide celebrity. His services as a sire were a failure. He was not an impressive progenitor. But at the same time there was being used in that herd a bull that need not have shown his nose inside a show ring; yet he did more to improve and render that herd famous than all the bulls that had been used in it up to that time. I remember remarking about the comparative failure of the prize bull, whose portrait adorned the Shorthorn Herd-book, to an experienced breeder. He did not express any surprise, and said, "Well, you see he was only a chance beast." He meant that the bull was very much better than his pedigree. He was, to some extent, in the animal kingdom what an aboriculturist or botanist would call "a sport" in the vegetable.

This brings us to another part of our subject, *i.e.* the transmission of acquired characters. Few naturalists will admit, or but to a very limited extent, a belief in the hereditary transmission of acquired characters. Yet a belief in the theory of evolution necessitates a belief in the hereditary transmission of alterations, of developments, or of adaptations in the organism. As Lamarck was undoubtedly wrong in his view that all acquired characters are transmitted, so I consider is Weismann wrong in holding that they are never transmitted. I cannot conceive how our monodactylous horse could have been evolved from his polydactylous progenitor of ages ago, according to the latter theory. The germ plasma—the reproductive cells—are much more protected, are less exposed to external influences than the somatic cells generally, and ought therefore to be less liable to change. In the breeding of our domestic animals we see how difficult it is to maintain a high standard of excellence; and in animals that are unusually large or unusually small how there is always a tendency in the offspring to return towards the average of the species. We can easily understand, therefore, how the offspring should represent, not necessarily the mean, but any stage, as it were, of the swing of the pendulum between the two extremes, in this case the sperm-cell and

the germ-cell. Outside that it is difficult to understand how anything could be represented apart from external influences, apart from the inheritance of acquired characters. According to Weismann's theory, if carried to its logical conclusion, there would be no variation, no evolution, but adherence to a type the slight differences of which would become less and less with the intermingling of the germ-plasma of the sexes until a continuous and unbroken mean was established. Those who oppose Lamarck's views say that, although we go on docking our horses generation after generation, nature does not take the hint and save us the trouble by failing to produce the tails. Certainly not. We need not expect species to become modified at that rate. Because a few naturalists have endeavoured to modify species, to obtain the transmission of acquired characters for, it may be, a few consecutive years, and have generally failed, their brief records being infinitely too short, are we to refuse to accept the records handed down to us in the geological periods through countless ages? No. The latter testimony cannot be refused. The life of a single naturalist is but as nothing compared to the time taken for the evolution of the modern horse. And it need not be expected that a distinct species can be permanently altered or modified in the course of a few years. The older the type, the longer a character is transmitted, the more generations it has passed through, the less liable it is to variation or reversion, and the more permanent is it likely to be. In the case of the horse, the type of which has been very slowly evolved, the tendency to atavism or reversion is but rarely manifested.

But the main cause of this paper being written is the advance that has taken place in our knowledge regarding the ætiology of tuberculosis during the last decade. Owing to the discovery of the specific cause of the disease by Koch, heredity as a cause is now looked on by many as perfectly absurd. Tuberculosis, it is said, is due to the bacillus, and nothing but the bacillus; and careful *post-mortem* examination of young animals has proved that it it very seldom transmitted. Granting that the disease is seldom demonstrable in the newly-born animal, is there not here a misunderstanding owing to a confusion of terms? Tuberculosis that exists at birth is not merely hereditary, it is also congenital; and the fact of a disease seldom being congenital is far from being proof that it may not be frequently hereditary. Experience teaches that tuberculosis is hereditary to as great an extent as

most diseases included in that class. And although we believe in the contagiousness of the affection, and believed in it long before the discovery of the bacillus by Koch, that does not prevent us believing that heredity is a powerful predisposing cause. Notwithstanding the immense losses caused by tuberculosis, and the fact that "galloping consumption" is not unknown in the bovine species, it is not usually a rapidly fatal disease. When animals are carefully kept and maintained in good condition, the fatal cases, even in an affected herd, are not very numerous for the first few years. I have no hesitation in saying that a cow affected with tuberculosis may go on breeding for years, even for the full term of her natural life, as the natural life of a cow goes, without any suspicion attaching to her. But the offspring of this cow will, as a rule, be less robust than herself. Still the majority of her daughters may go on breeding as their mother did before them, some of them escaping the disease for a longer or shorter time, while others may escape it altogether. But each succeeding generation, following the direct line of those that become affected with the disease, have a greater tendency to become affected if exposed to the contagion; and if the sire is also affected the result is still more rapid, the percentage of fatal cases also rapidly increasing. That is to say, the disease seems to increase in malignancy with each succeeding generation.

There is no immunity conferred in the case of tuberculosis. There is rather an increased receptivity in the organism for the bacillus; or as it might preferably be put, a diminished ability to defend itself against its attacks.

Now I do not claim that all this is due to heredity; a great deal is due to contagion, but heredity plays a very important part. Any animal that seems delicate or weakly, instead of being fattened and sent to the butcher, is more carefully nursed and pampered; and if kept in good condition, often survives to propagate its species. And what like are they? Their coats become soft and scanty, their skins fine and thin, and on being handled they are described as being like silk. In light-coloured animals often every blood-vessel in their ears can be seen when they stand between one and the morning sun. The hardy robust constitution is lost, and we have a delicate weakly subject, liable to be seized by the first disease it is exposed to, and the most common one is tuberculosis. There is something about these animals that are liable to become

fatally affected with tuberculosis, not easily described, but which can often be detected by the experienced eye. I do not mean to assert that this can be done in all cases; no, nor in the majority of cases. In testing herds with tuberculin I have been as much surprised in the animals that reacted as any one could have been. But these were probably animals from a healthy ancestry, that might have lived for years without manifesting any clinical symptoms; while those that are likely to be fatally affected by the disease can often be picked out. I will even go further than this, although I may not get many to agree with me in this sceptical age. I have not the least doubt but the tendency to become affected with tuberculosis can be transmitted by the male. Now do not misunderstand me. I do not mean that the disease is congenital, and it may be the transmission of an acquired character; but a bull bred from generations of affected ancestors transmits to his offspring what I might call the tubercular diathesis; at least he transmits his weakened, his impaired constitution, a diminished power to resist the attack of the germs of the disease.

Do not assume that I expect these animals to become affected unless they are exposed to the contagion, but being exposed they fall an easy prey to it. It is argued that when tuberculosis is stamped out, when the risk of contagion is gone, hereditary transmission need not be feared. Granted; but it will be a long time yet before tuberculosis be excluded from our herds, and none of us will see it banished from the human species.

Is not liability to a disease as likely to be transmitted as an immunity from it? I will never forget when rinderpest was raging in this country, in the early winter of 1865 and 1866, about an outbreak at a small farm in Kincardineshire. It was before the stamping-out method was adopted; and out of some thirty animals all died but three. These were a cow and two of her daughters,—one two years old and the other one. Here was a case of hereditary immunity, not complete perhaps, but at least partial. Diphtheria and scarlatina in the human subject often manifest a tendency to attack particular families. Many may be equally exposed to the contagion, but only one or two families are attacked, and of these few members may survive; while strangers living with them, if attacked at all, generally escape with comparative ease. And these are parasitic diseases. Then take the case of cancer. I knew a family of three brothers, the last of whom died recently,

and all three died over fifty years of age of cancer of the stomach. Now although it is not conclusively proved that cancer is a parasitic disease, the probability is in that direction. Yet the chance of contagion being the cause of the disease in these cases is very remote, and it surely will not be argued that they were congenital. I know another family, or rather a group of related families, the majority of the male members of which have died of disease of the heart between the ages of fifty-five and sixty-five, and most of them from what has been termed "failure of the heart's action." That could scarcely be congenital, but it is undoubtedly hereditary.

Since writing the above I have received my copy of the *Proceedings* of the National Veterinary Association at its recent meeting at Great Yarmouth; and observing the confusion that arose there regarding the heredity of tuberculosis, I hope you will excuse my referring to the subject again, even at the risk of some repetition.

It is quite evident that it all arose from the confounding of the terms "congenital" and "hereditary," two words which, although somewhat analogous, are by no means synonymous or interchangeable. Had the mistake not originated with those whose eminence in the profession lends weight to their statements, and leads them to be received with respect, I would not have stopped to notice them; but believing them to be misleading and even dangerous, it is my duty to try and neutralise, as far as possible, the mischief that has been done.

There is not the least doubt but to the great majority of naturalists and biologists the two words convey different meanings. Turning to the 'Century Dictionary,' the word congenital is defined as "Produced or existing at birth. . . . . From birth."

Any peculiarity or characteristic, any abnormality or malformation—it may be an excess or a deficiency—that is in existence and demonstrable at birth, is congenital. Then what is heredity? I have already defined it so far. Turning again to the 'Century Dictionary,' it is said to be "Transmission of qualities or characteristics, mental or physical, from parents to offspring. The tendency manifested by an organism to develop in the likeness of its progenitor. The principle or fact of inheritance or the transmission of physical and mental characteristics from parent to offspring, regarded as the conservative factor in evolution, opposing the tendency to variation under conditions of environment."

Now this is a very full definition, but without the slightest indication that it has the same meaning as the word congenital.

The cases I have given of diseases occurring in families fifty, sixty, and more years after birth, are acknowledged to be hereditary, as well as the immunity or partial immunity from some diseases frequently met with, but they cannot be considered congenital. Now looking at its application to the case of tuberculosis, it seems evident that, at the Yarmouth meeting, it was held that it could not be hereditary, because it has been proved, and I presume everyone will admit, that it is very seldom congenital. In the case of transmission from the male progenitor it was held to be absurd, because tubercular disease of the testicle in the bull was almost unknown. It is certainly very rare. I have only met with one case in practice, but strange to say I have seen one case recorded in the *Recueil*, and another in the *Journal of Comparative Medicine and Veterinary Archives*, since I read this discussion. But that is apart from the question. It is admitted that tuberculosis is a contagious disease due to a pathogenic microbe. It is denied that it can be hereditary, transmitted from the male progenitor, unless one or more bacilli are conveyed in the sperm-cell, the male germinal element, to the germ-cell or ovum, the female element, to be included in the new organism or individual.

For my part I cannot look upon that proposition as anything but absurd. As far as congenital disease is concerned, if due to inheritance from the male progenitor, the conveyance of the contagious element in the sperm-cell is absolutely necessary in the case of a parasitic disease. But in the case of a hereditary disease it is quite different. It will be said, "Then the disease itself is not hereditary; all that is hereditary is a tendency or predisposition to that particular disease." Precisely so, and nothing else is contended for in purely hereditary diseases. No one will assert that in the cases I mentioned of cancer, and heart disease, the disease itself was congenital. In the case of cancer, which is in all probability a parasitic disease, will it be contended that the parasite must be transmitted in the sperm-cell before it is admitted that the hereditary predisposition is due to the male progenitor? Certainly not. In the case of hereditary as distinct from congenital disease, I am not aware that any one alleges that the actual disease itself is conveyed from parent to offspring, but only a tendency or predisposition to become attacked

by the disease when circumstances are favorable to its development and not otherwise. If this is not the case our list of diseases hitherto considered hereditary will have to be curtailed almost to the vanishing point.

But it is concerning diseases connected with osseous tissue that the greatest diversity of views are held regarding their hereditary nature—splints, spavins, ringbones, sidebones. The hackneyed phrase as to their ætiology, "shock or concussion, external violence, and hereditary predisposition," occurs to me as I write the list. I do not mean to say that these are the only causes, but they are the most common causes of these diseases. Another very important factor in their development is the conformation of the animal, and no one will question the fact of conformation being hereditary. Round bones, curby hocks, short upright pasterns,—all hereditary characteristics,—are of the utmost importance in the development of disease.

Splints are classed as hereditary by many authorities. Others have denied their hereditary nature because they are non-existent at birth, and consider them due to environment. Unfortunately they are so common that not one horse in six used for fast work on our roads reaches eight years old without a splint or splints. Fortunately they are seldom a cause of permanent lameness. The fact of their being so common is almost sufficient to nullify any proof their reappearance in the progeny might give of their hereditary nature. And they might, with a fair amount of reason, be as well ascribed to environment, in other words, to the concussion the canons are subjected to during fast work on our roads and streets. In those less numerous cases in which splints develop in young growing colts, concussion on hard roads cannot be blamed. They are undoubtedly due to the young, soft, unmatured bones being ill fitted to bear the weight of the rapidly growing body, and are nature's attempt to strengthen them by throwing out a support or stay at the weakest part. And we find that as soon as the necessity for this stay or crutch is removed by the bones becoming fully developed and consolidated, the splint or stay becomes removed without any treatment at all. And we see the whole process taking place without the animals ever being lame.

But is not this weakness, this failing, this necessity for a support or stay, an inherited condition? I believe it is.

There seems to be more reason to doubt the hereditary nature of *spavins* than that of any of the diseases men-

tioned; the reason being that notwithstanding the number of different types of hock to be met with, any hock, even the large, broad, flat hock, may develop a spavin. But for all that there is not one breeder in a hundred that will breed from a horse with a spavin if he can get one without it, other things being equal. In looking for horses in a fair I have been surprised at the number one finds with enlargements over the seat of spavin, which, we are told, are due to the animal being kicked over the part a short time before; the general opinion evidently being that a spavin due to external violence is not so bad as what we might term an idiopathic spavin.

Coming to *ringbones*, they are undoubtedly very largely due to conformation. The short, stumpy, upright pastern is avoided by everyone who pretends to know anything about a horse. As the farmer's wife in the West country said to the groom who called at the farm with his horse during her husband's absence, "Na, na, laddie, that horse is nae yuse here; he has nae quets ava man."

Sidebones are—if any of those diseases of the bones of the limbs are—an acquired character. They are certainly not congenital, and they as certainly reappear in the progeny. There is no doubt but they are much more common in our heavy horses than they were forty or fifty years ago. Why should this be? Our roads are better than they were fifty years ago, and to that extent are harder on the surface. Our heavy horses are mostly shod with calkins, so that the frog cannot come in contact with the ground. There is thus no support for the centre of the foot when weight is thrown on the limb, and it sinks downwards and backwards to a much greater extent than would be the case were it well supported. The effect of this is to drag the lateral cartilages inwards and downwards to an unnatural and inordinate extent each time the weight of the fore-quarters is thrown on the limb. This has the result of setting up a chronic inflammation in the cartilages, which terminates in sidebones. Very few, I presume, will call in question the hereditary nature of sidebones, and if due to the environment, *i. e.* the nature of the roads, the method of shoeing, &c., then they are an instance of the transmission of an acquired character,—although I have little doubt but it will be argued by upholders of Weismann's theory that it is merely a case of similarity of environment; that similar surroundings are sufficient to hammer on similar changes on successive generations, as it has been described by Thomson.

Navicular arthritis, as it is termed, although it is questionable whether the common term navicular disease is not a more suitable name, as the diseased condition seems frequently to originate in the bone, is another disease the hereditary nature of which is pretty generally admitted. Many will say that it is a result of conformation and the hard roads, as it is in well-bred horses that are often used as roadsters in which it is most common. But this is far from being always the case. I remember making a *post-mortem* examination of the feet of a thoroughbred mare that never did much road work. She had been lame for at least ten years, and the nature of her lameness had puzzled some of the most experienced veterinary surgeons in the country; the main reason being that she had as good well-shaped feet and as open heels as could have been wished. But the *post mortem* revealed old-standing navicular disease. I mention this case because I had every opportunity of observing a daughter of this mare. Like her mother she had beautiful feet. But her training was scarcely finished before she began to manifest that tantalising fugitive lameness, sometimes evident, sometimes not discernible, so characteristic of commencing navicular disease.

I need only say that it became confirmed, although I did not get the opportunity of making a *post mortem* upon her.

Curb is another disease very often said to be due to conformation, and undoubtedly curby hocks are as surely hereditary as anything can be. I remember a thoroughbred horse that travelled my native district, which had very passable hocks himself, but whose stock could be recognised by their hocks wherever they were met with,—recognised as readily as Clydesdale men could recognise the gets of "Darnley" from those of the "Prince of Wales," also by their hocks. Be that as it may, curbs are generally hereditary, and not very rarely congenital.

Another abnormal condition, not usually looked on as a serious one, but which is certainly hereditary, is that known as "*windgalls*." I remember a stallion, also a thoroughbred, the stock of which nearly all developed windgalls; that, is windgalls much larger than the ordinary puffy swellings, which are as common as splints. These were certainly not congenital, seldom appearing before the animals were yoked, and very seldom causing lameness. It could not have been considered a very serious defect in the sire, as he travelled the same district for at least twelve years.

On diseases of the feet I will not enter. Here at least every one will admit that conformation is of the greatest importance. Given what I might call a bell-shaped hoof, narrow round the coronet and expanding considerably towards the ground, even at the quarters,—it does not matter how carefully it is cultivated and shod, no amount of attention will ever make it a good foot, whatever the quality of the horn may be.

We have not time to consider diseases such as "roaring," and those nervous affections which are generally admitted to be hereditary; but we have to some extent made our position clear, and possibly done something to advance the discussion of this important subject.

In conclusion, we find that we must fall back on the aphorism that "like begets like,"—that an organism tends to develop in the likeness of its progenitors. Notwithstanding the ability and determination with which Weismann's hypothesis is at present upheld, I cannot subscribe to it in its entirety. I fail to see how some of our existing species could have undergone the transmutations they have admittedly done, as revealed by geological data, apart from some other influence than Weismann acknowledges.

However, it will not require much argument to convince any experienced veterinary practitioner that many diseases are hereditary; more especially diseases connected with the locomotory organs. Even if it is argued that they are generally due to conformation, it does not diminish their importance. It rather adds to the value of pedigree; the importance of an ancestry with an unsullied record, unblemished by defects that are likely to appear in the progeny, and diminish materially their usefulness and value.

As Edwin Arnold puts it in his 'Light of Asia'—

> "That which ye sow ye reap. See yonder fields!
> The sesamum was sesamum, the corn
> Was corn. The silence and the darkness knew!
> So is a man's fate born.
>
> He cometh reaper of the things he sowed,
> Sesamum, corn, so much cast in past birth;
> And so much weed and poison-stuff which mar
> Him and the aching earth."

I can only look on the weed and the poison-stuff as the weaknesses and hereditary taints inherited from his progenitors.

SOME POINTS IN THE EVOLUTION OF THE HORSE.

By Rowland G. Saunders, M.R.C.V.S.

Evolution, or "the act of unfolding," is the term applied to that process by which nature is, and has been for ever, producing new species and new varieties by the modification of pre-existing species and varieties. I think I am justified in saying that it is no longer a theory, but is now accepted (by scientists at least) as a fact,—the only matter in dispute being the exact causes that have brought about these results. The two main theories that have been advanced are known as Lamarck's "Theory of Heredity" and Darwin's "Theory of Natural Selection."

Taking the *Lamarckian theory* first, it supposes that these gradual alterations in structure by which new species are produced are mainly due to characters acquired during the lives of the animals, and transmitted to their offspring. For instance, take the giraffe as an example. He was at first a short-necked quadruped; but, by continually exercising his neck by browsing off trees, the neck has become gradually elongated in consequence of this use. This effect was transmitted from parent to offspring, and thus each generation of stretching (if I may so put it) accumulated, until the present condition was established.

The *Darwinian theory* says, that as the offspring of the same parents differ, so will certain of them (according as they are better adapted for the conditions under which they live) have a greater chance of surviving in the struggle for existence, and therefore have a greater chance of carrying on the race and of transmitting their inborn peculiarity. For instance, when it became advantageous in pre-historic times for giraffes to browse off trees, those members, say of one family, who had longer necks and legs than their brothers would be more likely to survive in the struggle for existence, and to produce offspring the average of whose necks and legs would be as long as those of their parents; yet (and here comes the point) some of these would have longer necks still, and would have again a greater chance of surviving and of carrying on the race. In this way the present condition has gradually been reached.

This "*natural selection*" is imitated by man in a so-called "artificial selection," which he employs when he wishes to produce a new variety of any of the domesticated animals. He decides on the exact pattern he wants and then starts breeding, and of every family he only preserves those that come nearest in characters to his pattern, and breeds only from them, until by the gradual development and preservation of these characters he produces in time a form exactly resembling his pattern. But it is my intention in this paper to deal with a few simple facts, and to leave theorising to abler minds.

Were we to search the whole of the animal world we could find no better example than that supplied by the horse to illustrate that relationship between the structure of a certain animal to that of allied animals, and to the actions which it has to perform in the economy of nature. It is a splendid example of so-called specialisation or modification from a general type to meet the requirements of some special mode of existence; which specialisation has been carried to an extreme degree in the horse. We shall notice it in the limbs and teeth especially, where we shall recognise two opposing forces striving for the mastery in determining the form and structure of the different parts. In the first place we have heredity or adherence to a generalised ancestral type; and opposed to it we have special modifications of that type, the latter generally proving victorious. When this is the case we are reminded of the characters of the ancestral form by structures not fully developed and often useless, known as "rudimentary," such as the splint bones and wolves' teeth in horses.

The evidence in favour of evolution, as derived from the history of the horse, is obtained from two sources: firstly, from the structure of horses as we have them now; and secondly, from their past history, as revealed by fossil remains. Of the evidence derived from the structure of existing horses, the most valuable is that furnished by these rudimentary structures, which are most valuable as indicators of changes in structure that have taken or are taking place. These rudimentary structures are generally recognised as belonging to one of two states. First, there are those which are known as "*nascent*," that is, structures that are gradually in process of growth to something larger and more useful. Secondly, there are those known as "*vestigial*," that is, structures now in a degenerate state, which were in former ages more greatly developed and of greater

usefulness. Most of such structures in the horse are proved to belong to the "vestigial;" as, for instance, the ulna and fibula. Darwin says of rudimentary organs, "they may be compared with the letters of a word, still retained in the spelling but become useless in the pronunciation, but serving as a clue for its derivation." Such structures, therefore, lend strong support to the theory of evolution, but are quite inexplicable by and antagonistic to the old doctrine of creation.

The second source of evidence (as derived from the study of Palæontology,—that is, the science which treats of the study of fossil remains) supplies us with still greater support for this theory. In fact, in the ancestry of the horse we have a tolerably complete (though still far from perfect) chain of links, reaching from the existing representatives of the family to the earliest Tertiary Age.

I should say that *specialisation* (that great factor in the evolution of new forms) is generally recognised as operating in one of three ways: firstly, in the addition of parts not met with in most other animal forms, and not found in the earliest members of the group which afterwards possess it,—such as the horns of oxen; secondly, in the suppression of parts commonly present in other animals, as the upper incisors of ruminants; and thirdly, in a modification of the form, size, and relation of parts; as, for instance, the complicated foldings of the grinding teeth of elephants.

I need hardly explain that that part of the earth's surface with which we are acquainted is deposited or arranged in strata of varying thicknesses, overlying one another, having been laid down in this way principally by the agency of seas and rivers, the oldest formations being, of course, the furthest from the surface. Geologists have classified these strata into four divisions: first, those of the oldest or *Primary Age*, which contain mostly the fossil remains of invertebrate forms and fishes; secondly, those of the *Secondary Age*, which contain reptilian remains; thirdly, those of the *Tertiary Age*, in which we find remains of birds and mammals; and lastly, those of the most recent or *Quarternary Age*, containing human remains. The Tertiary deposits have been again divided up into rocks of the oldest or Eocene Period, next of the Miocene, and then those of the Pliocene Age. The Quarternary Period is also subdivided into the Pleistocene and Recent. Coming from the oldest to the most recent formations, it is not until we reach the Early Eocene strata that we come across the remains of mammalian animals, whose anatomy leads us to

suppose that their digits were encased distally in hoofs, and therefore belonging to the great class of Ungulata.

Now the so-called Old Lake Basins of the Rocky Mountains of North America, belonging to the Eocene and Miocene Periods, have been one of the most fruitful sources of the remains of these primitive-hoofed mammals. These Lake Basins were formerly lakes of great depth with rivers flowing into them, but have gradually become filled up with sediment brought down by these rivers; indeed, in some this muddy sediment has accumulated to a depth of over a mile in vertical thickness. Preserved in this hardened and compressed mud are found excellently preserved skeletal remains of the horse's extinct ancestors; these early Ungulates probably having been from time to time overtaken by floods while grazing near these prehistoric rivers, or having been drowned while attempting to swim across, their bodies then floating down the rivers and sinking to the bottom of the lakes, there to be covered in time by this mud.

Professor Huxley, lecturing on "The Theory of Evolution" in America in 1877, in the latter of three lectures, gave as an example of undeniable evidence in favour of evolution a *résumé* of what was then known of the ancestry of the horse, and foretold that a form would be discovered in the Lower Eocene deposits with four complete toes and a rudiment of the fifth; while in still older forms the series of digits would become more and more complete, until we came to the five-toed ancestor which gave rise to the whole series.

Now shortly afterwards this prophecy was realised by the discovery in the lowest Eocene formations of America by Professors Cope and Wortman of the skeletal remains of a five-toed mammalian Ungulate, to which they gave the name of "Phenacodus," and which is now generally accepted as the common ancestor not only of all existing Ungulates, but, as Cope maintains, of all the carnivorous and insectivorous animals, as well as of lemurs, monkeys, and therefore of man himself!

It is a very curious fact, that although at the time of the discovery of America by Columbus, not a single horse was known to exist there, yet, judging from the fossil remains of horses and horse-like animals that have been found in the Tertiary formations of that country, they must in former ages have roamed over the length and breadth of the continent in countless herds. What is still more surprising, the climatic and other conditions there seem to

be extremely favorable to horses, inasmuch as when re-introduced by the Spaniards they at once bred prolifically, and in a short time were again inhabiting the plains of certain parts of North America in a wild state, and but for the agency of man would soon have been found as abundantly as in pre-historic times. This at first strikes us as being inexplicable, and yet I think there is a satisfactory explanation. During the early part of the Quarternary epoch, the climatic or other conditions must have become in some way unfavorable to the then existing horses, rendering life there impossible for them. In this case a large proportion would have perished, and the rest have migrated to Asia across a strip of land which then joined the two continents at the place now occupied by the Behring Strait. Now when the conditions in America again gradually became favorable to equines, this piece of land was no longer there, the Behring Strait preventing a migration back again, and so they became confined to the Asiatic and European continents.

I now propose to give you a brief description of this "*Phenacodus*" which, with the help of this sketch (which is a copy of the photograph which accompanies a description of it by Professor Cope in the 'Geological Survey of the United States Territory, 1889,' and reproduced in Professor Flower's excellent work on 'The Horse'), I hope

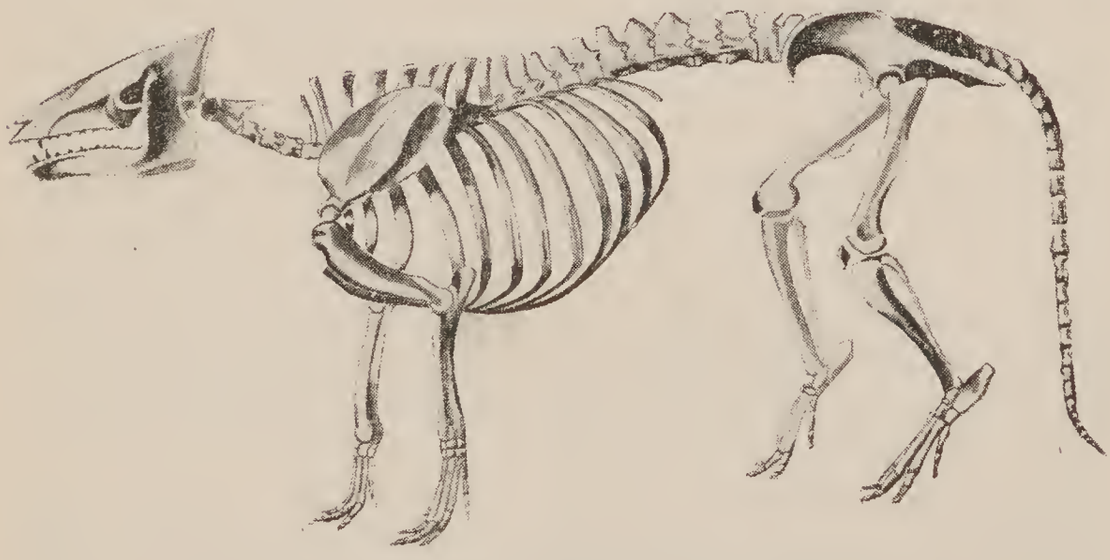

Fig. 1.—Skeleton of *Phenacodus primævus*.

will give you a very fair idea of its osteological characters. I will then just touch upon the intermediary links which connect this form with our horse, noting the modifications that have taken place during the transition. As I have said, in reviewing all the fossil forms from the most ancient

times down to the present, this Phenacodus is the first mammal that shows any sign of possessing ungulate characters; but its skeleton differs so materially from that of the horse that had we not the connecting links we should never have imagined this small animal (for it was only about the size of a bull-dog) was the forefather of our horse.

The *peculiar shape of the skull* when viewed from a lateral aspect will immediately strike you. The high occipital crest, which is on a level with the superior spinous processes of the lumbar vertebræ, and the squareness of the lower jaw, form a striking contrast to the skull of the horse, as do also the sharp tubercular molar teeth. The long axis of the skull is quite horizontal to the ground. The structure of the nasal bones leads us to suppose that this animal had a short proboscis like that possessed by the existing tapir. The shape of the brain as judged by the cranial walls was of a very low type with very few convolutions. The hemispheres of the cerebrum were very small as compared with the cerebellum and olfactory lobes, and they did not overlap the cerebellum as they do in the horse. The orbital fossæ, as you see, are continuous with the temporal, there being no bridge of bone separating them. The teeth are adapted for a herbivorous diet, and consist of three incisors above and below on each side, one canine, four pre-molars, and three molars. The air sinuses were not nearly so extensive as in the horse; for instance, the frontal sinuses did not extend over the cranial cavity at all.

The *vertebral column* consists of seven cervical vertebræ, fourteen or fifteen dorsal, six or seven lumbar, and three to five sacral. The cervical vertebræ are noticeable for their short length and for the large backward projecting hooked spinous process of the axis. The other vertebræ differ in minor points from those of the horse, and the tail is very conspicuous from its great length, having reached quite to the ground.

The *scapula* is of a very oval form, with the spine situated far back. The humerus is sigmoid in shape, and relatively long. The ulna equals, if it is not actually larger than the radius, being quite distinct from it, lying to its outer side and articulating with the cuneiform. As you will see from this drawing, Fig. 2, A (which is taken from an article by Professor Cope in the *American Naturalist* for 1884) the carpus furnishes us with a very generalised arrangement of the wrist-joint, every bone of the second

row lying directly beneath and articulating almost entirely with the bone above it; that is to say, the trapezoid with the scaphoid, the magnum with the lunar, and the unciform with the cuneiform. There are five digits, each consisting

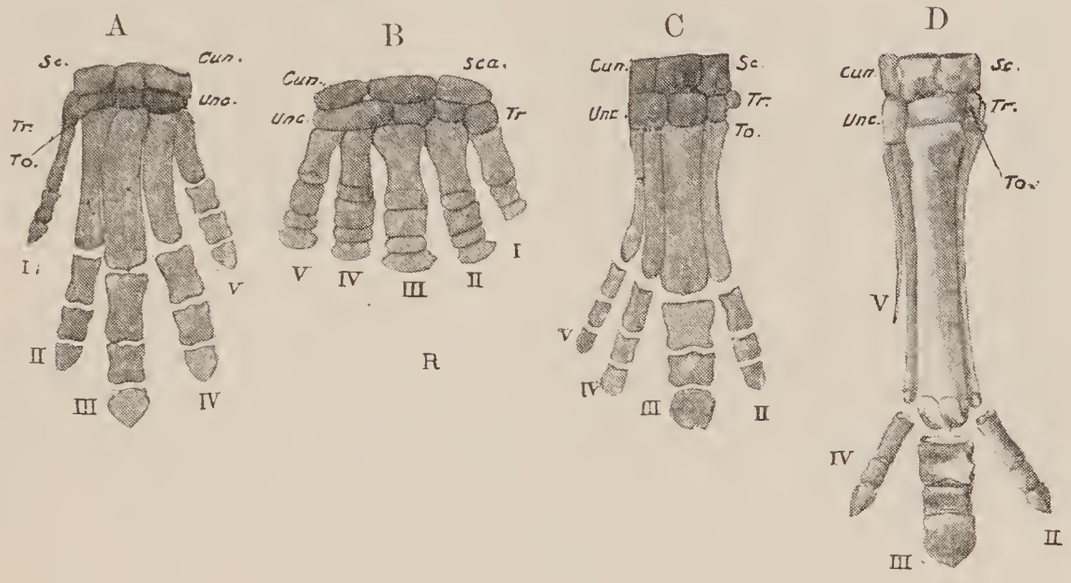

Fig. 2.

of a metacarpal bone, and three phalanges, except the first, which has only two phalanges. The third digit is the longest and the most strongly developed of the five, but was much more slender and shorter comparatively than this digit in the horse. It articulated with the magnum and unciform only. The pedal bones are expanded, flattened, and spatulate, but somewhat acuminate, and by their form we are justified in supposing that they were encased in hoofs. Its mode of walking was digitigrade, with its feet in an intermediate position; that is to say, not using the whole of its sole for the purposes of progression as the bear does, nor yet only the tip of its toes as the horse does.

By the *structure of its feet* and teeth we surmise that this little animal inhabited more or less marshy land, and fed on a diet of soft and succulent herbage. As I have said, its remains are found in the Lower Eocene rocks, which are the oldest formations of the Tertiary Period.

The next form we will notice in which any marked advance in structure has taken place is known commonly as the *Hydracotherium*, which is found in the Lower and Middle Eocene formations, associated with other forms differing from it in details only, such as the Eohippus, Pliohippus, Orohippus, &c. This animal was about the size of a fox, and the most noticeable alteration in structure from the Phenacodus is the commencing reduction in the number of digits. As you will observe in this drawing, Fig. 2, c, the

inner digit of the fore-foot has quite disappeared, the other digits being still quite complete, but the fifth no longer touches the ground. The hind foot shows a further advance in structure, for not only has the inner or first digit disappeared, but the fifth is also absent. Therefore this animal possessed four digits in front and three behind. This alteration was accompanied by other modifications to which I shall refer in a few minutes, for as Cuvier has said, "The organism forms a connected unity, in which the single parts cannot change without modifications in other parts."

The next in order in the direct line of descent is the *Mesohippus*, an animal about the size of a sheep (so you see that an increase in size is taking place), the remains of which are found in a stratum occurring between the Eocene and the Miocene rocks known as the Oligocene. This

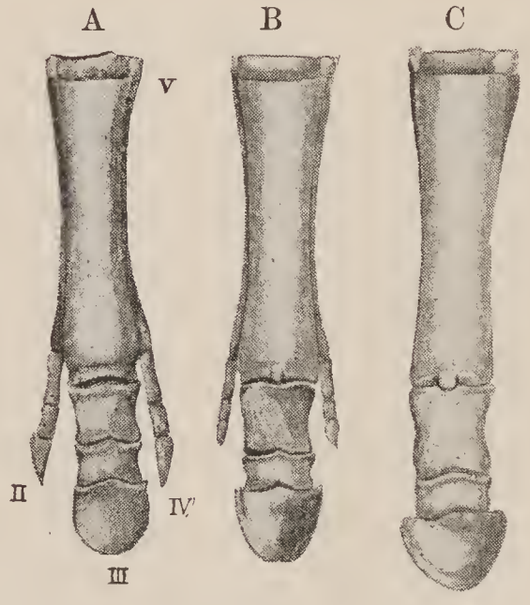

FIG. 3.

stratum is therefore more recent than the Eocene, but older than the Miocene rocks. I should mention that this form, like the last, is not an isolated one, and the changes that we note as having taken place did not do so suddenly, but we have innumerable links connecting the one with the other, and presenting us with all gradations of these alterations in structure. You will notice in this diagram (Fig. 2, D) that the digits of the Mesohippus are further reduced in number, as in the fore-foot the fifth or outer digit has quite disappeared save for a splint-like rudiment. The second, third, and fourth are still complete, and all reach the ground, but compared with the other two the third or median digit

has increased in diameter as well as in length. No alteration of consequence has taken place in the hind foot, which is somewhat similar to that of the Hydracotherium.

The Anchitherium (a later form, found in the Middle Miocene) is about the same size as the last, that is, about the size of a sheep, and has the same number of digits in the fore and hind feet. The lateral digits (represented in this drawing, Fig. 3, A) still reach to the ground, but they are much reduced in size, and can have sustained very little of the body-weight. The rudiment representing the fifth digit is also further reduced in size.

In the later Miocene and Pliocene rocks we come across closely-related forms known by such names as *Hipparion, Hippotherium, Protohippus,* &c., the so-called "three-toed horses" which resembled an ass in size. In these animals the second and fourth digits are much reduced in size, being now only about the size of the dew-claws of the ox, not reaching the ground, and situated more to the back of the third digit, which has increased greatly in size and length (Fig. 3, B). These lateral digits, though so greatly reduced in size, yet still have the complete number of phalanges each, while their distal ends are encased still in small hoofs. Representatives of these species roamed in innumerable herds over the whole of Europe.

It is not until we come to the comparatively recent Pleistocene strata that we come across *true horses, members of the family Equidæ,* in which the outer toes (that is, the second and fourth) are reduced to splint-like rudiments of the metacarpals and metatarsals (their phalanges having disappeared), which rudiments are quite concealed beneath the skin. The middle digit has become more massive still, and has also increased in length; the pedal bone at the same time has become more expanded in breadth. In the oldest members of the family (as this diagram shows you, Fig. 3, C) the splint bones were rather larger than in our horses, and were not fused to the third metacarpal as we find them now. This is found to be the case with the *Hippidium and Pliohippus.*

Fossil remains of true horses, almost identical with existing ones, are found, as I have stated, abundantly in all parts of America preserved in the most recent geological formations. In Europe, also, in the so-called "Polished Stone Period" (the period, that is, when pre-historic man had not yet discovered the use of metals, so fashioned his various implements of rough stone), wild horses were very abundant, whose remains in cave deposits are often asso-

ciated with those of man; showing that its chase formed one of his principal occupations.

Judging from the shape and characters of the bones preserved, and from certain rough representations of these horses that have been found carved on reindeer's horns, bones, &c., by these barbarians, we gather that these wild horses were of rather a small size, with large heads, rough and shaggy manes and tails, heavy in build, being in fact very much like the existing wild horses of the Steppes of Russia and those found in the north-west of India. As to the original colour of these early horses, Darwin thinks that they in all probability descended from a single dun-coloured, more or less striped primitive stock, to which our horses occasionally revert. The mark running down the centre of the back often seen in horses (known as the "list"), and the marks occasionally seen on the shoulders and limbs, are in all probability slight reversions to this original striped condition. Darwin also infers that these original horses inhabited countries that were for a shorter or longer time each year covered with snow, because they still retain the instinct of scraping the snow away with their feet to get at the grass beneath, while cattle in similar circumstances will starve.

Now with your permission, gentlemen, we will recapitulate a little, and notice other changes that have taken place side by side with these changes in the digital region. *Taking the limbs as a whole*, besides the great increase in length that has gradually taken place, the various bones composing them have been concentrated and strengthened, the lateral bones have become reduced in number and in size, while the axial or median ones have enlarged, until the force exerted by each limb comes to act directly through its axis in the line of motion. Also the angles formed by the bones with each other have been gradually altered in such a way that the muscles can act to a greater advantage. These alterations brought about a great increase in the speed of the animal.

The *humerus* has become proportionately shorter, and the sigmoid shape of it in the earlier forms is not noticeable in the horse; the head of it also projected much more strongly backwards than now. The external tuberosity projected over the bicipital groove, which groove in all the forms down to the Mesohippus was not divided by a median ridge, but was only a single groove. In the succeeding form, the Anchitherium, a small tubercle is seen for the first time dividing it into two. Another

peculiar point of the humerus of the Mesohippus is the presence of a facet on the outside of the external condyle, which articulated with a like surface on the radius, thereby permitting a greater freedom of movement in the elbow-joint than is possessed by the horse.

I have already mentioned that in the Phenacodus the *ulna* was of the same size as the radius, situated to the outside of it and quite distinct from it, articulating with the cuneiform. Now the ulna was not only gradually reduced in size, but has also retreated to the back; and in our horse is represented by a fused upper part, which only serves for the attachment of muscles. In the Mesohippus we find the ulna reduced in size, and sometimes the distal end is for a very short distance co-ossified with the radius; but it still articulates with the cuneiform and pisiform, while the radius articulates with the scaphoid and lunar only. In the Anchitherium it is still quite distinct, though firmly united to the radius for its whole length;

FIG. 4.

and in the Hipparion, though still traceable for its whole length, it is quite amalgamated with the radius. Accompanying this reduction of the ulna the radius has gradually increased in size, and its ends have become expanded, so that the inferior articular surface comes to spread over and occupy all the bones of the upper row of the carpus.

This set of drawings of the radius and ulna, Fig. 4 (taken from Professor Huxley's 'American Addresses') will show you these points better than I can explain them.

The changes that have taken place in the carpus may be summarised thus:—In the first place, it has become shorter in the vertical direction; secondly, an interlocking of the bones has taken place by the rotation (or the shifting) of the upper row of bones to the outside over the under row, with the result that the bones of the second row no longer lie directly beneath those of the upper row; thirdly, the median bones (that is to say, the lunar and magnum) have become enlarged, while the lateral ones have not only diminished in size, but have also retreated behind the median ones, so that less of them is visible when the carpus is viewed from the front. Lastly, the trapezium gradually became smaller, until to-day it is entirely absent in the majority of horses.

(*To be continued.*)

AN INVESTIGATION INTO THE NATURE, CAUSE, AND MEANS OF PREVENTING THE CORNSTALK DISEASE (TOXÆMIA MAIDIS) OF CATTLE.*

By Veranus A. Moore.

(*Continued from p.* 650.)

Ætiology.

The varied conditions under which the cornstalk disease has been found to occur show that the existing theories concerning the cause are not in accord with the observed facts. A causal relation of corn smut to the death of the cattle cannot be entertained in view of the clinical and experimental evidence that it can be eaten with impunity. The "germ theory" is likewise shown to be incapable of demonstration, and cornstalks affected with the Burrill disease have been shown to be wholesome food for cattle. The careful microscopic examination of both fresh and fixed organs and blood from a number of affected animals for the purpose of determining whether or not death might be due to the invasion of protozoa or other minute parasitic organisms, has invariably given negative results.

* Report from U.S. Board of Agriculture.

A careful analysis of the reports of this disease received from many interested persons, as well as the published statements already referred to, show quite conclusively that different agencies take part in the production of the total number of the deaths annually attributed to this disease. When deaths occur within twenty-four hours after cattle are turned into the cornstalk field, it is highly probable that ordinarily the cause is due to mechanical interference rather than to the effect of any specific agent, either organic or chemical in its nature. The well-known and rapidly fatal condition known as "hoven," due to the repletion of the rumen with solid food or from the evolution of gases arising from the contents undergoing certain fermentation, is presumably the cause of many of the deaths which occur within a few hours.

Dr. Going, in a paper read before the Kansas State Board of Agriculture in 1890, describes an enteritis in cattle produced by pasturing them in cornstalk fields late in the fall and winter. He states that the animals are sick for several days, and are amenable to treatment. It is not unreasonable to suppose that many of the deaths occurring after several weeks of feeding exclusively on the dry and leached cornstalks would result in the development of a more or less severe gastritis. Veterinarians are familiar with a disease in cattle due to malnutrition and indigestion, produced by the continuous feeding upon pasture grass during the winter or after it has been killed by frost. In these cases the symptoms are said to be similar to those described by Dr. Going.

The engorgement and drying of the contents of the third stomach or "impaction," is reported on good authority to occasionally cause death in cattle fed upon dry food. This condition very likely occurs more or less frequently in cattle feeding continually upon dry cornstalks. In these examinations, however, it has not been found, with one exception, and deaths from this cause are believed to be infrequent. In addition to the above there are many accidental causes, such as poisoning and traumatic injuries, which presumably occasion a few deaths that are attributed to cornstalk disease. Thus I have learned of the death of a steer which occurred within twelve hours after turning the animal into the cornstalks. This death was reported to be due to the cornstalk disease, but it undoubtedly resulted from dehorning, as the hæmorrhage was reported to be excessive and the weather severe.

There are, however, many deaths which cannot be explained by the intervention of these known agencies or conditions, and which should be included under the popular designation of "cornstalk disease." In these investigations the animals thus affected had been in the cornstalk fields from two to fourteen days, but the greater number of deaths occurred in from five to eight days after the first exposure.

As already stated, the existing theories concerning the cause of the disease have not been verified, and the outcome of the observations and experiments made during these investigations indicate that the exciting cause is quite different from those heretofore announced, although the exact ætiological factor has not been demonstrated.

The symptoms and clinical history, so far as obtained, and the lesions in the animals examined, indicate that this is due to a poison. It is evident that the determination of the nature of the toxic substance cannot be made until the facts obtainable by chemical analyses concerning both the inorganic and organic constituents of cornstalks and their toxic properties upon cattle are recorded. It is furthermore not clear whether this toxic condition is due to an excessive quantity of the poisonous substance or to an unusual susceptibility on the part of certain animals. The fact should be noted that ordinarily cattle are late in the fall turned from pasture lands on which the grass has been repeatedly frozen into the cornstalk fields. This sudden change from a sparing diet to an over-abundance of a single highly nutritious food would be expected to produce more or less derangement in the animal economy. The exact effect upon the animal body of the normal salts or alkaloids in the cornstalks when taken in such abundance after a period of partial fasting cannot at present be recorded. The large quantity of the corn fodder stored up in the rumen during the first few days permits of the accumulation of these principles in the animal body.

The effect of different soils upon the quantity of the inorganic salts in cornstalks seems not to be fully understood. It is stated that corn has the property of taking up from the soil a large percentage of potash, which appears in the cornstalks as nitrate of potash, and which is poisonous to cattle. Mayo* has recently shown that cattle fed upon certain corn fodder died from poisoning with the nitrate of potash which the corn contained. He also found that

* Bulletin No. 49, Experiment Station of the Kansas State Agricultural College, 1895.

cattle eating cornstalks from the same field were affected differently, some dying, while others remained well. He reports a most remarkable quantity of nitrate of potash in certain cornstalks, as the following quotation will show :

> Beneath the leaf sheath which surrounds the stock just above the joints the nitrate had crystallised in fine white crystals which resembled a white mould, but was easily recognised by tasting with the tongue. Around and in the cut ends of the stalks were solid masses of almost pure potassium nitrate. If a stalk was cut in two and tapped lightly upon the table, the crystals of potassium nitrate would be jarred loose and fall as fine powder upon the table. These stalks were grown on land adjoining a barnyard which formerly was used as a hog-yard. The examination of cornstalks from a field some distance from the yard failed to reveal the existence of potash by the method previously referred to.

These observations are of much importance, as it is possible they may afford a key to the ætiology of this disease. The lesions in the affected cattle reported by Dr. Mayo show much greater intestinal disturbance than those found in the animals I have examined. I have carefully examined many of the cornstalks in several of the fields in which cattle died, but have not in any instance found the presence of perceptible quantities of any crystallised substance either beneath the leaf sheath or in the stalk. This discrepancy can be readily explained by the observation that these salts appear in perceptible quantities only in corn grown on soils containing large quantities of certain fertilisers.

Another fact that points to the probable toxic nature of this disease is the recovery of certain animals which showed symptoms similar to those manifested by the animals which died. It was observed by the owners of these cattle that after the crisis was passed they recovered very rapidly. Although this disease is generally supposed to be invariably fatal, it is highly probable that a large number of animals are affected and recover.

The possibility of the existence of a fatal poison in the cornstalks is shown by the report of Dr. Mayo. It is not determined, however, that potash or sodium compounds are the only substances which might be produced in unnatural proportions under certain conditions in the corn plant. As the fatal quantity of known toxic substances appears to vary much in cattle, owing somewhat to the condition under which they are administered and largely to the degree of susceptibility of the individual animals, it seems to be necessary that further chemical analyses of cornstalks should be made. The stalks should be taken under different conditions, such as late in the fall, after

their exposure to the fall rains and frosts, and when grown on different kinds of soil, and the physiological and toxic properties of the substances thus obtained should be tested on cattle previously kept under different conditions. As the accumulated data point to the toxic nature of this disease, that hypothesis is provisionally assumed, although the exact nature of the poison is not yet determined. It appears, however, to be restricted to the corn plant, and for that reason the disease it produces is designated Toxæmia maidis. The theory of the toxic effect on certain animals of the normal constituents of the cornstalks when taken in large quantities is strengthened by the fact that the disease does not occur in those sections of the country where the cornstalks are cut and properly cured, and where they are subsequently fed to cattle in small quantities, but sufficient in amount to keep the animals in good condition. It is hoped that chemical investigations of this disease may clear up the doubtful points.

Prevention of the Disease.

The rapid course of this disease indicates that prevention is the only practical remedy. As it appears in widely separated herds, there being many localities where it has never occurred, it is evident that the practical application of any general precautionary measure must be attended with very little expense, or the burden of prevention would be heavier than the loss of the occasional animals. As the disease is not contagious, measures to prevent its spread are not called for, and the adoption of any method is for the sole purpose of protecting individual farmers against a possible loss of one or more animals from this disease. It has been shown that the methods now in vogue are not trustworthy, and the adoption of those heretofore suggested would, from the nature of the disease, be impracticable.

It has been observed in these investigations that a few farmers residing in the States where the disease is most prevalent, and who cut and feed their cornstalks after the method followed in the Eastern States, never lose cattle from this disease.* This is further illustrated by

* A most interesting illustration of this was found by Dr. E. C. Schroeder in the State of Missouri in 1891. The conditions were as follows: Two farmers had large cornfields separated from each other by a wire fence. One of these men pastured his cornstalk field and lost heavily from the disease; the other cut his corn and fed the stalks with no ill effects whatever. The only difference in the conditions that could be found was in the method of feeding.

the history of the malady. Formerly it was the custom of the farmers in the States of Ohio and Indiana to turn their animals into the cornstalk fields after the ears had been picked from the standing stalks, and they reported losing many cattle from this disease. More recently the farmers in these States, with possibly few exceptions, cut their corn when it is ripe, and subsequently feed the properly cured stalks to their cattle. Frequently these stalks constitute the food for the cattle throughout the greater part of the winter. Where this practice is in vogue the cornstalk disease has disappeared. At the present time the practice of cutting the cornstalks is becoming prevalent in the State of Illinois, and several agriculturists of that State have stated that the losses from this disease are growing less and less each year. Although these illustrations may be considered coincidences, they conform to the long experience of the farmers of the Eastern and Middle States, who invariably cut their corn and feed the cured stalks, and who never lose cattle from this malady.

In view of the history of this disease and the facts brought out in the investigations, the only method of prevention which commends itself to the consideration of the farmers who wish to protect their herds from this malady is to cut their corn when ripe, cure the stalks, and subsequently feed them to their cattle. This method is based upon the experience of agriculturists as well as upon theory. The results of more scientifically arranged experiments could not be more demonstrative than those obtained by the actual experience of thousands of farmers.

This method of prevention, if generally followed, will necessarily cause a radical change in the practice of farmers in the sections of country in which this disease occurs. At first thought it may seem impractical and unworthy of consideration, but a more careful study will show that it can be practised with profit, especially on the smaller farms, where the amount of corn and the number of cattle are not large.

This method is urgently recommended, not only as a means of preventing an occasional loss of from 5 to 30 per cent. of the cattle feeding in a cornstalk field, but also in its great economy of corn fodder. The waste resulting from cattle running in cornstalk fields is notorious. The universal testimony of farmers who are feeding their cattle on cut and properly cured cornstalks is that it pays. The quality of the stalks is much superior to that of the weather-

beaten and bleached stalks left standing in the field. In addition to this, the amount of fodder obtained from a certain area is much increased over that utilised when the cattle run at will in the standing stalks, so that from a given acreage of corn a much larger number of animals can be wintered. While this means of prevention may not be practicable where large herds are driven from the Western plains to be wintered in the corn-growing sections where the acreage of cornstalks is extravagantly large, it is deemed practicable wherever economy in the use of forage becomes necessary. The slow but constantly increasing rapidity with which this method of feeding cornstalks is advancing from the East shows that it is a question of a few years before the custom will become universal throughout the West. When that time arrives the cornstalk disease of cattle will presumably not appear.

Clinical Cases.

A MONSTROUS FŒTUS.

By A. E. M.

The causation of monsters is still unknown, though of recent years experimental embryology has shown how mutilation of the segmenting ovum may produce some anomaly in subsequent stages of development. Most of the researches have been made upon the segmenting eggs of frogs and even those of invertebrates, and though the injury inflicted was great relative to the size of cell-mass, yet the progress of the ontogeny was not seriously impeded, and advanced sufficiently far to allow of deductions to be made. In spite, however, of these experiments, no one has brought forward a hypothesis that will explain satisfactorily the origin of abnormal individuals; nor is it known what factor is indispensable to their creation. The idea that maternal impressions could affect the developing fœtus, and that an image fixed upon the animal's brain was reflected in the physiognomy of the offspring, was long held and firmly believed in, but since the knowledge of embryology has widened, and the various phases to be gone through in the developmental cycle has been in many instances accurately ascertained, a more or less accurate conclusion may now be drawn as to the appearance of certain conditions. To give an example of what we mean, hypospadias, the condition where the urethra remains open

below, where in fact the urethra has not closed in, is easily explained from a knowledge of the development of the

genital organs; similarly "harelip," misplacements of various organs, various abnormalities of the blood-vessels which may be shown to be persisting fœtal structures, various forms of ectopiæ,—all these and more may be explained by an acquaintance with the various changes through which the young embryo has to pass before it can be recognised as a fœtus.

In the monster here illustrated (from a drawing by Mr. Hodder) we have the condition known as a parasite, and a parasitic monster is "a double monster consisting of a fully-developed individual with rudiments of another attached to him." According to the nomenclature of St. Hilaire and Charpentier, the condition here represented is known as *Heteradelphus*.

It is useless to speculate upon the cause of such beyond suggesting that splitting of blastoderm doubtless occurred posteriorly, but whether it was a vertical or a horizontal

split it is difficult to say. Some hold that monsters are apt to arise from ova to which more than one spermatozoon has had access, but what is the determining cause of the direction the development has to take is wholly unknown.

Unfortunately I had no opportunity of making a dissection, and I should be glad in the future if any of our readers who may come across a specimen will kindly send it on to me.

SPEAR WOUND IN A HORSE.

By Joshua A. Nunn, F.R.C.V.S., D.S.O., C.I.E., Veterinary Captain A.V.D.; Principal, Lahore Veterinary College.

The accident happened on a pig-sticking expedition on June 9th. A boar had broken cover across some very rough ground, and the owner of the injured animal and myself were riding him hard, my companion being a little in front of me and to my left, when his horse came down. The rider was thrown off on the near side, the horse rolling over him from right to left. Seeing them both get up, I am sorry to confess that in the excitement of the run I did not pull up; but the boar being killed shortly afterwards, I rode back and found the horse standing with the spear in him in a diagonal direction from above downwards and forwards on the left side of the thorax; the entrance wound being over the ninth rib, ten inches from the sternum and twenty-two inches from the spine; the exit wound over the seventh rib, three inches from the sternum; the distance from the point of entrance to that of exit was eleven inches. The entrance wound was gaping and irregular in shape, about four inches across; that of exit punctured, about one inch across, out of which the spear point, which was what is known as the bay-leaf pattern, protruded about four inches. The spear had broken off about three feet down the shaft, leaving a jagged splintered end of bamboo. When the spear was withdrawn there was very considerable hæmorrhage, one of the intercostal arteries being divided, but on probing the wound with my finger I found that it had not punctured the thorax, but had merely run along the ribs through the muscles. I plugged the wound with a pocket-handkerchief and such material as was procurable, and having no instruments at hand to take up the artery, applied pressure by a broad bandage, made out of a native's turban passed round the body, and a thick pad of undressed cotton wool, procured from the

nearest village, buckling a couple of girths tightly over the whole. This rough treatment stopped the hæmorrhage, and I had the patient walked slowly back to the College Hospital in Lahore. On arrival, the ragged flap of the entrance wound was sutured and the lower one opened to allow of free drainage, the whole being well and frequently irrigated and dried antiseptically. The patient made an uninterrupted recovery, and was discharged on the thirty-fourth day.

The peculiar features of this case is that the owner was using what is known as the short or Bengal spear, which is only about six feet long, with a weight of lead at the end, and is not held like a lance, but grasped at the butt end, the fingers to the front and the thumb above, the point of the spear being held downwards towards the ground and slightly backwards. It is used with a downward jobbing thrust when the boar is under the horse, and is, of course, held in the right hand, whereas in this case the wound was on the left side.

The only way I can account for the accident is that when the horse fell the spear flew out of the rider's hand and, the loaded end being heaviest, lodged point upwards. The horse rolling over from right to left must have come into contact with the spear-point, inflicted the wound, and continuing to roll over, broken the shaft between himself and the ground. The rider received a small flesh wound in the middle of the right scapula, but this, I think, was done with the splintered end of the bamboo shaft when the horse got up, and not by the point of the spear.

I am induced to send this case to you on account of the scarcity of records of cases of wounds inflicted on animals with weapons, and also because it appears illustrative of how a bone or any hard tissue will deflect them from their proper course.

HYDROCEPHALUS IN A FŒTUS.

By A. J. Williams, Student Royal Dick Veterinary College, Edinburgh.

On January 26th, 1896, I was called to see a mare which the owner had been treating for colic. She had shown symptoms of colicky pains for some hours. The owner had administered colic draughts, but she seemed in great pain when he left her. Upon arrival I found the mare suffering

with labour pains, and upon examination I found the fœtus was abnormal, which accounted for the mare not being able to foal. After manipulating a little, I discovered the head was an enormous size and contained fluid. I then introduced a small trocar and cannula and drew off

a couple of quarts of fluid. Afterwards I was able to draw away the fœtus without further trouble. The time of foaling would have been in April. After removing the fœtus I amputated the head, and filling the cavity to its original size I took a photograph of it, from which a drawing was made by Mr. Arch. Hodder.

METASTATIC LAMINITIS FOLLOWING METRITIS.

By George Green, M.R.C.V.S., Honley, Huddersfield.

This case came under my notice last June. On the Saturday night I was called in to see a mare which had foaled on the previous Thursday, but had not cleansed. When I arrived I found the mare suffering from metritis, with the placenta still hanging from the vulva. She was very irritable, straining, trembling, and perspiring freely. The pulse was full, incompressible, and very rapid. Temperature 103° F., mucous membranes of a dirty red colour, most anxious countenance, and breathing very laboured.

I removed the placenta, which was most offensive, but still came bodily away, and prescribed the following, to be administered every four hours.

℞ Tinct. Opii . ʒvj }
Tinct. Bellad. . ʒiv } in a little water.

Visiting the animal early next morning, I found her no better, so ordered fomentations to be resorted to at once. The blankets used were steamed in a large steamer, which was fixed over a copper; we thus got the heat without the water. At the same time I administered

℞ Tinct. Aconite . . ♏iv,
P. Pot. Nitras . . ʒij,

every three hours. The fomentations were kept up, both over the loins and vulva, for six hours, after which, seeing she appeared better, we removed the blankets, had her rubbed, dried, and well sheeted. She remained easy for several hours, but about 1 a.m. next morning began to paddle with her hind feet, constantly turning her head towards her flank on the right side; the straining recommenced, and a quantity of dirty, creamy-looking fluid was expelled. The temperature had also risen, and the eye more injected, consequent on these symptoms. The hot blankets were again applied, and continued throughout the day until 6 p.m. Thus she was fomented twenty-four hours altogether, the above medicine being continued.

About this time a curious thing occurred, the inflammation and irritation seemed to leave the womb, and symptoms of laminitis in the fore-feet appeared. I immediately removed the blankets, had her thoroughly dried, and warm clothing put on. Bran poultices were applied to her feet; a pint of linseed-oil, with a dose of the aconite medicine, was given to her, and she was left in charge of a man, who stayed up all night to watch. Next morning the inflammation in the feet seemed more acute; the mucous membranes were scarlet, the dirty appearance having disappeared. The pulse was very full, but the appetite was improved. I had a little fresh grass cut for her, which she seemed to relish very much. Towards evening the inflammation had subsided a little, the eye was not quite so red, and the pulse a little reduced. This subsidence went on gradually for several days, so that at the end of the week from the time the poultices were applied, they were taken off, and the mare was exercised for half an hour daily in one of the pastures. She was then blistered, and turned out to have a summer's run.

She is now as sound as ever she was. I might say that the foal, which was weakly from the first, developed joint-ill, and died a fortnight after its birth.

THE VETERINARIAN, OCTOBER 1, 1896.

THE PECUNIARY POSITION OF THE ROYAL COLLEGE OF VETERINARY SURGEONS.

"We can't save money; we can pay our way, and that is the most we can do." So said the President, Mr. Trigger, at a recent meeting of the Midland Counties Veterinary Medical Association, when replying to the congratulations of the Chairman. One would have thought that for a corporation to pay its way was the acme of perfection; that so long as no calls were to be made and no extraordinary expenditure was contemplated, the mere fact that both ends could meet without overlapping on the negative side would be quite sufficient. But no; even in these distressing times, while expenses still remain practically the same as in the good old days when plenty of money could be gathered in, and a surplus devoted to the purchase of Stocks, it is suggested that further means should be devised in order to bring more grist to the mill, more money to the chest where it is to be locked away. It is usual in business when the income falls to cut down expenses, to set the house in order to meet the altered circumstances, so that the incoming and the outgoing may still retain the same proportions as of yore. We cannot kill the fatted calf and at the same time expect to utilise it for breeding purposes—you cannot, to put it plainly, keep your cake and also eat it. But how comes it that the source of supply is cut off, and that retrenchment is imperative if a balance is to be carried forward and on the right side?

"Our sole income at present is from the students' examination fees. . . . We cannot bleed the students any more—we have now reached the utmost limits in that direction." We should think so. Students are already called upon to pay as much as the Charter allows, and no increase can be made unless a new Charter is obtained. Already the student has to pay in examination fees more than a third or a fourth, as the case may be, of the cost of his tuition fees during his career; that for examinations lasting, say, in all ten hours, he pays twenty pounds plus one guinea registration fee; whilst for one hundred and twenty weeks' tuition in College he pays from fifty-five to eighty guineas. Truly as much blood has been drawn as the poor victim can stand! But what remedy is suggested? merely a

modified venesection in the shape of a poll-tax,—"a small registration fee of ten shillings per annum," as it is put. So although further squeezing of the student is inadvisable, now Nemesis pursues him in the ranks of the profession. It seems the veterinary practitioner is "between the devil and the deep sea;" as much as possible extracted from him whilst a student, and then asked to pay for the privilege of remaining upon the register. "We get as much out of you as we can whilst yet you are not one of us, and as soon as you enter the profession you must pay a guinea to be enrolled and ten shillings a year to keep your name there; if you don't pay, then we expect you are defunct, and your name will be removed." Such an explanation may be offered to any one inquiring about the entry to the profession, and who could blame him if he asked whether the profession existed for the Royal College, or the Royal College for the profession? If the latter is the true state of affairs, then why should those in power complain so long as it can pay its way? We are convinced that with the majority the idea of a poll-tax, or a yearly licence to practise the profession, or an annual renewal of his permit, will not be popular. We have already to pay one income-tax,—why most of us do not know, for small and uncertain incomes merely exist on paper,—and that one is sufficient.

We are afraid some other suggestion must be made, and one likely to be more popular; and in the hope that we may be forgiven for giving vent to our opinion, we would point out that there is nothing to prevent those who are burdened with superfluous cash to hand it over to the Treasurer of the Royal College, that he may invest it in like manner to that vanishing quantity the surplus of past years, and that in order to give the donors a little encouragement their names be associated with any bursaries or scholarships founded. In this manner some would obtain notoriety, the officers of the College would be quiet in their consciences, the profession would be delighted, the students satisfied, and all would be serene.

"AS OTHERS SEE US."

It is always interesting, even if a painful experience, to know the opinion of others concerning ourselves—to see ourselves as others see us. It is even sometimes amusing, because the opinion expressed may be funny and given in

such equivocal terms that two constructions may be put upon it. It may cut both ways. At the recent Sanitary Congress at Newcastle, Dr. R. S. Marsden, of Birkenhead, opened the discussion upon three papers read relating to "Tuberculosis and Public Health." In his speech he said "that it was not absolutely necessary for meat to be inspected by veterinary surgeons. As matters stood at present, a great many veterinary surgeons were imperfectly educated with regard to pathology, and were very much behind the time. Whilst he would welcome the assistance of competent veterinary surgeons in meat inspection, he still protested against the general view that the only person capable of acting as a meat inspector was the veterinary surgeon. In his opinion the best man for the purpose at present was a well-educated butcher of long training, and he might say that at Birkenhead they thus acted on the principle of setting a thief to catch a thief." We have heard it said often that the poacher makes the best gamekeeper; but we cannot say that "the well-educated butcher of long training" is proficient in what Dr. Marsden deplores is lacking in most veterinary surgeons, who are imperfectly educated with regard to pathology." We did not think that long servitude as a slaughterer of cattle was the best training for the pathologist, and we are not convinced, after this expression of Dr. Marsden's views, that long acquaintance with the shambles fits a man to say that meat is or is not fit for food; but we are certain, along with Mr. Hunting, that the term insufficiently educated can be applied to other callings—including bishops and medical officers of health. If Dr. Marsden had inquired he would have found that veterinary students have to pass a severe examination in pathology, and have to satisfy two members of his own profession (Dr. Woodhead and Professor Delépine) that their knowledge of general pathology is no mean thing; besides this, they are examined twice in special pathology. The veterinarian of the present day compares favorably with his fellow practitioner of human medicine, and to place him as inferior to a butcher—even well educated and of long experience—is to say the least unfair. We have no means of knowing what is the opinion of the Birkenhead Inspector as to his M.O.H.'s comparison; but we do know that in some English towns Dr. Marsden's analogy applies to the medical officer of health. It would be entertaining to know the opinion of some medical men as to the working of the Compulsory Notification Act and the M.O.H.

The Month's Progress.

Antiseptic Value of the Sublimate Spray.—M. P. Chavigny (*Ann. Inst. Pasteur*) finds from experiments made with one per thousand sublimate solution used in the form of spray, that even when continued for periods longer than those adopted in practice, this disinfectant fails to destroy microbic germs or to diminish their virulence. The author conceives the preventive action of sublimate to be due to the deposit of a thin layer of the antiseptic on the surface of the germ, which by cutting off the communication with the surrounding nutritive medium suspends the vital activity and development of the germ. Hence, if the ambient layer be removed the antiseptic property is lost, and the germ becomes free to develop. The author's method was to contaminate plaster plates with infected dust, anthrax, *Staphylococcus pyogenes aureus*, potato bacillus, and then spray them with a freshly-made one per thousand solution of sublimate, to which were added 1 grm. of sea salt and 5 c.c. of hydrochloric acid per litre. The spray was made with the small Geneste and Herscher apparatus at a distance of 1·5 m., and maintained for one to ten minutes. The plates were then covered with sterilised paper, and allowed to dry. When dry the surface was scraped in places to get some dust, while on other parts a few drops of sulphate of ammonia solution were poured before the dust was removed. Cultivations made from the dust and examined at twenty-four and forty-eight hours indicated that sprayings of a one per thousand solution of sublimate confer merely a temporary protection, and this is likely to fail if the antiseptic layer be removed or become imperfect, so that a communication between the germ and the medium becomes established. Allusion is also made as to the effect of the spray on thin dry layers of tuberculous sputum. Guinea-pigs inoculated with this sprayed sputum died of tuberculosis in six weeks to two months.—*Journ. Roy. Mic. Soc.*

Disinfecting Power of Formalin.—Dr. H. Strehl (*Centrl. f. Bakteriol. u. Parasit.*) found that formalin vapour is not an effective disinfectant when used against a dry virus (anthrax, staphylococcus). But when formalin spray is used the test objects are killed, and the same result is arrived at even with the vapour, if the objects be moistened

first. Herr Schepilewsky (*Diss. Petersburgh., ibid.*) states that the effect of solutions of formalin tested on anthrax is about equal to that of carbolic acid, and about fourteen times weaker than sublimate. In the gaseous form the influence of formic aldehyde is much stronger than in solution. As a disinfectant for articles of furniture, clothing, furs, and those made of metal, it is very satisfactory, inasmuch as it does not damage or tarnish them. The author's results are quite in agreement with those of other observers, viz. that while formalin is a valuable and effective disinfectant, its action may be inoperative on dry material, or where the material is placed in a position difficult of access, as between the leaves of books.—*Ibid.*

Staining Flagella.—Dr. V. A. Moore (*Proc. Amer. Micros. Soc.*) stained the flagella of bacilli by Loeffler's method with modifications. As a mordant he used a 20 per cent. solution of tannic acid 10 c.cm., a cold saturated solution of iron sulphate, 5 c.cm., and a saturated alcoholic solution of fuchsin, 1 c.cm. As a staining fluid he used Ziehl's carbol fuchsin; 1 grm. of fuchsin is dissolved in 10 c.cm. of absolute alcohol, to which 100 c.cm. of a 5 per cent. solution of carbolic acid is added. (This is the reagent used for the demonstration of the tubercle bacillus.) In making the cover-glass preparation, a large drop of warm water was placed upon each slide by means of a sterile pipette; the point of a sterile platinum wire was gently touched to the culture, and immersed in the water near to the centre of the cover-glass. A sufficient number of the bacilli were found to adhere to the wire to make from six to ten preparations. The tray containing them must next be placed in an incubator at 36° until the water has evaporated. After the preparations had dried, they were fixed by passing them twice through the flame of a Bunsen burner, or better by heating, for from five to ten minutes, in the hot air oven at 120° to 140°. The covers were next immersed in 3 or 4 c.cm. of the mordant in a large test-tube, and this was heated until steam began to come off. If there is a greyish film on the cover after washing in water, it can generally be removed by rinsing in alcohol, and then again in water. The staining fluid should now be applied in the same way as the mordant, and allowed to act for from one to three minutes.—*Ibid.*

Bacteriological Diagnosis of Glanders.—Dr. C. Gorini (*Ann. de Micrographie*) uses a modification of Chenzinsky's method for staining the bacillus of glanders, both in

sections and on cover-glasses. The stain must be prepared afresh immediately before use (1 part saturated aqueous solution of methylene blue, 1 part of ½ per cent. solution of eosin in alcohol of 70 per cent., 2 parts distilled water). Sections are left in this mixture for thirty to sixty minutes, and cover-glasses for a few minutes. They are then washed in water and mounted in the usual way. As cultivation media the author used glycerine gelose and potato. The latter was found to be far superior to the former, which is almost universally used for isolating the bacillus of glanders. The potato cultures, incubated at 37°, gave a positive result in forty-eight to seventy-two hours; while the growths on gelose did not appear till the fourth or fifth day, or remained sterile.

The author also records that the bacillus of glanders coagulates milk at 37° in ten to twelve days, the reaction being neutral, and no further changes taking place in the clot.—*Ibid.*

Parasites in a Dromedary.—Prof. Railliet, who made a *post-mortem* examination of a young dromedary, found various parasites, both external and internal, one of which at least is new to science. The external parasites included Inodes (*Hyalomma ægypticum*) and *Sarcoptes scabiei*, var. *Cameli*. The latter had produced mange, which had become generalised; and several students who assisted at the autopsy were infected, but the effects soon passed off. The internal parasites included specimens of an Œstrus (*Cephalomyia maculata*), found in the nostrils, pharynx, and œsophagus; and among those found in the intestines were numerous Strongyles of an undescribed species (*Strongylus spathiger*); three Œsophagostomes, probably *Œsophagostomum venulosum;* a dozen *Trichocephalus echinophyllus*, and five examples of a tapeworm akin to *Stilesia globipunctata* of the sheep, which Railliet names *Stilesia vittata*. The learned author at a following meeting of the Société de Biologie, to which the foregoing had been reported, declared that the Strongyles found in the digestive tract of man and the higher animals could be divided into two chief groups, linked together by intermediate forms. The first group allied to such as the *Strongylus strigosus* of the Leporidæ or to *S. contortus* of sheep is marked by its members being relatively of large size, with a body coloured by hæmoglobin; these worms live in the stomach, or more rarely in the anterior part of the small intestine. The second group, after the type of

the *Str. retortæformis* of the Leporidæ, is represented by much smaller worms, greyish in colour and generally found in the intestine. Certain Strongyles, as for instance *Str. filicolis* of the sheep, closely resemble the second group in appearance, but are linked with the first group by the sexual characters of the male. The same host generally harbours at the same time examples of both groups, and not unfrequently even three.—*Revue Vétérinaire.*

An Infectious Osteomyelitis.—M. Bouchet was asked to see a cow that, a few days after her second calving, suddenly showed very grave symptoms of a generalised character. The general symptoms rapidly subsided, but the hind quarters were affected, as the marked uneasiness indicated: movement, and even resting in the prone position, appeared to cause much pain. Osteomalacia of the pelvis was the diagnosis. After a month serious deformation of the pelvis was apparent; the bony framework had become loosened, and the frequent crepitation indicated fractures. Several weeks later the patient died. The hip-joints were infiltrated, and the various elements of the articulations were softened, friable, and easily cut. The pelvis contained a large collection of pus, in which portions of necrosed tissue floated. The body generally and the viscera showed an extensive infection. Professor Cadiot considered the case as merely osteoclastis, complicated with a purulent infection.—*Ibid.*

Coryza in a Cow.—A cow when heated was exposed to a violent storm of rain. Some time afterwards when housed she began to make a roaring noise. The respiration was difficult, and suffocation was threatened. The patient constantly snorted, as if to rid itself of an obstacle in the nasal passage, but nothing was ejected. Next day the respiratory distress continued, but the cow coughed, and rejected several masses of a fibro-membranous character. A blood-stained muco-purulent discharge flowed from the nose. The nasal mucous membrane was marbled in appearance—grey and brown. Guittard adopted the following treatment. One per cent. solutions of lysol (cold) were injected into the nostrils, turpentine was rubbed into the skin between the jaws and upper part of the neck, a blister was applied to the frontal region, and sulphate of atropine and arseniate of strychnine in capsules was administered. The patient was convalescent in six days.—*Ibid.*

Useful Prescriptions.—The following is recommended as an analgesic and anti-neuralgic:

℞	Antipyrin . . .	5 parts.
	Cocain. hydrochlor. . .	·5 to 1 part.
	Aq. destill. . . .	10 parts.

To be used injected under the skin. It may also be employed in the production of local anæsthesia prior to operation.

For use in cases of fever:

℞	Quinin. hydrochlor.. .	3 parts.
	Antipyrin . . .	5 ,,
	Aq. destill. . . .	10 ,,

May be used for hypodermic injection for the horse. The antipyrin assists in dissolving the quinine.—(*Clin. Vét.; Berliner Thierärztliche Wochenschrift.*)

Trichinosis.—Askanazy, by feeding rabbits on flesh rich in Trichinæ, produced intestinal trichinosis. After having killed the animals and fixed portions of the intestinal walls in collodion (?), sections were made to determine how the parasites got into the structures of the wall. It is at the end of about seven days' feeding that one may expect to find the parasites in the wall of the gut. The female Trichinæ alone penetrate, passing between the epithelial cells covering the villi, or if the epithelial cells have been lost it passes directly into the subepithelial tissues. Little by little it journeys to reach the lacteal, where it deposits its eggs. The resulting embryos hatched in the lacteals are carried by the lymphatic system to other parts of the body (*viâ* the circulation).

These researches have a great medical interest attached to them. It has been generally held by Leuckart and others that the Trichinæ deposit their eggs in the intestinal canal of the host, and that the embryos perforate the walls to reach other organs. If this were so it might be expected that an invasion of the host could be prevented by laxatives administered within a fortnight. It is now known, however, that the female parasite herself has to traverse the thickness of the wall in order to place her eggs in the circulating medium, and this migration of the female occurs during the first few days after ingestion of the infected meat.—(*Archiv f. path. Anat., ex Annal de Méd. Vét.*)

A Case of Cerebral Tuberculosis.—The patient was a badly nourished cow, with skin adhering to the sub-

cutaneous connective tissues and with hair erect, and it had had for some time a tumour upon its head. M. Lesage was asked to examine her, and found she had an irregular gait and impaired vision. She did not, however, run into obstacles, but was unable to find her own place in the byre. Moreover, she appeared at times frightened of her companions, and tried to get away from them. Her condition seemed to be due to some affection of the digestive tract as well as to the nervous system. After she was slaughtered Lesage noted the following:—A suboccipital tumour of a tuberculous nature, in part calcified, and extending through the bone into the frontal sinus and into the brain case, near to the parietal lobe of the cerebrum. The tumour had invaded the brain substance for quite an inch. Tuberculous new growths were found in connection with the retro-pharyngeal lymphatic glands and with the costal pleura.—(*Progrès vétérinaire, ex ibid.*)

Stifle Joint Disease in Cattle.—M. Guittard distinguishes two forms, one due to injury and the other to rheumatism, the latter being the more difficult to cure. When due to injury he recommends refrigerants at first and then irritants (such as ammonia liniment or tincture of cantharides), and if the lameness has not disappeared at the end of several days he uses the following ointment:—

Bichromate of potassium . .	4 grms.
Iodide of potassium . . .	4 ,,
Vaseline	30 ,,

But this application must be used with caution; poisoning may occur if it is used over too large a surface, or too much applied, or rubbed in for too long a time.

Arthritis of the stifle due to rheumatism is in some parts of France known as gout, as well as by the term *oint*, and is distinguished from traumatic arthritis because the latter only affects one joint, and develops rapidly with much pain. But these differential characters are not good, nor to be relied upon. Guittard prefers the bichromate ointment to any other application, but he also gives salicylate of soda in large daily doses for eight or ten days. If the affection is tackled early, good results may accrue; but if changes in the structures of the joint have supervened, amelioration can only be expected so that the animal may be fattened. —*Ibid.*

Transverse Myelitis in a Dog.—A Danish dog, weighing about 90 lbs., eight years old, had been shut out all night

in mid-winter, and in the morning was found in a perished condition lying upon the snow. For about a fortnight he suffered from some digestive trouble which was amenable to treatment, and then recommenced his work as a draught animal. A few weeks afterwards, however, he showed less liking for work, and although he took his food as usual he lost condition. He often fell, appeared languid, and if he moved rapidly he tottered in his gait. Nothing else was observed. The owner took the patient to the clinic of the Veterinary Institute of Vienna, where he came under the observation of Herr DEXLER, who noted the following:— Pronounced irregularity of gait, slow movements, without any signs of ataxia. There was also a notable exaggeration of the muscular reflexes coinciding with those of the tendons; slight spasmodic contractions of the extremities, especially due to the extensors; a remarkable loss of condition, although the digestive functions were apparently unimpaired. Marked cutaneous anæsthesia and analgesia extending from the anterior border of the scapula to the tail on both sides of the body. The absence of sensation was so pronounced that a superficial examination easily discovered it, and the nervous symptoms impressed the observer as preponderating, and yet complicated the diagnosis. Could it be a case of sclerosis of the superior tracts in the cord? but this supposition was untenable in spite of the analgesia; or might it be a myelitis in spite of the sphincters acting, in spite of almost general and complete lack of sensation in the skin? Moreover, he could move his tail. The patient was killed and an autopsy was made. The carcass was thin and devoid of fat, the muscles hard and dry, the dura mater smooth and not adherent to the bones of the cranium. There was no lesion in cerebrum or cerebellum, pons Varolii, or medulla oblongata. The neural arches of the lumbar vertebræ and sacrum were compact, the cancellated tissue small in amount. Colloid matter was present external to the spinal dura mater, the latter being somewhat opaque and slightly adherent to the walls of the neural canal. The blood-vessels of the pia mater were congested and easily seen. The cord up to the cervical enlargement did not present any naked-eye lesions; at a level with the seventh cervical vertebra the cord was flattened and somewhat soft. Just behind this point, section of the cord revealed no demarcation between white and grey matter, the cord was less firm, quite white, and on microscopic examination of the fresh tissue showed granular bodies and drops of myelin. Four centimétres

further down such changes are not observed, nor were they to be seen the same distance above the lesion. Transverse myelitis was the diagnosis. The secondary degenerations which had the primary lesion as their starting point are interesting. They were remarkable, and were both ascending and descending.

Descending Degenerations.—(*a*) Four millimètres (one-sixth of an inch) below the inferior border of the primary lesion was seen an isolated degeneration of the crossed pyramidal tract which goes as far as the lumbar part of the cord to disappear at the level of the fifth lumbar vertebra. Marchi's fluid * demonstrated the extent of the degeneration. The sclerosis of the right tract was more dense than that of the left side, and continued as far as the middle lumbar region.

(*b*) There was also a degeneration of many fibres extending as far as the last dorsal vertebra present in the inferior and lateral part of the intermediate bundle of the lateral cord. (It is not easy to make out here what is the exact meaning. The translation is literal, but it is difficult to determine if the tract involved is the descending tract of Löwenthal or the intermedio-lateral of Clark found in the grey matter. The former is more probable.—Ed.).

Ascending Degenerations.—The ascending degenerations were more distinct than the descending. The posterior (or superior) portions and the direct cerebellar tract were affected. Several nerves issuing from the cord at the seat of the lesion, and both sciatic nerves, showed less change than one would have imagined, taking into account the severity of the lesion.

The author does not express an opinion as to the cause of the lesion; he does not even say that cold may be the cause. In the dog almost every form of acute myelitis and of polymyelitis are due to distemper, as Krajewsky proved; but it is doubtful if chronic myelitis has the same origin.—(*Journ. de Méd. Vét. et Zootechnie, ex Annal. de Méd. Vét.*)

Erysipelas affecting Horses.—Professor Semmer, in the *Berliner Thierärztliche Wochenschrift*, reports that in

* Marchi's fluid is composed of a mixture of Müller's fluid 2 parts and 1 per cent. osmic acid 1 part. It is especially valuable in investigating such cases as that here described, the osmic acid picking out as it were the degenerated parts and staining them black, the other portions being unstained. Müller's fluid is composed of $2\frac{1}{2}$ parts bichromate of potash, sulphate of soda 1 part, and water 100 parts.—Ed.

February, 1895, when the temperature had fallen from 12° to 27° below zero, a number of trotting horses were sent from a stud in the Volga province to St. Petersburg. They had to make a journey of 1000 kilomètres (over 620 miles), the greater portion by rail. Soon after their arrival, three stallions showed marked œdema of the lips, of the skin covering the jaws and parotideal region, and also lower part of the neck. All three died. With the serosity extracted from the swellings, a rabbit, a guinea-pig, a cat and two mice were inoculated. No results followed. On *post-mortem* examination of the horse that died, the following lesions were noticed. A serous effusion, tinted red, into the pleural, peritoneal, and pericardial sacs; under the skin of the head and neck, and infiltrating the integument itself, an exudate, partly fluid and partly coagulated, forming a layer three fingers thick. The serous membranes were reddened, and showed numerous petechiæ. An extravasation of blood was found in the mesentery, involved the lymphatic glands, and spread under the pleura. The lungs and intestines were normal; liver and kidneys of a yellow tint, and in a state of fatty degeneration. The spleen was large, and gorged with blood. Staphylococci were found in the cutaneous exudate; streptococci and short bacilli in the serous effusions. No result followed inoculation into a horse of the exudate and cultures made upon agar and gelatine; but a culture of the staphylococcus upon potato inoculated into the horse set up an erysipelatous swelling, and was fatal to a guinea-pig. It is possible that owing to the intense cold the lips became chapped, and thus allowed the infective agent to gain admittance and affect the serous membranes.

Botryomycosis of the Mammary Gland of a Mare.—Professor Fröhner, in the *Monatsschrift für Thiermedicin*, records the condition as observed in a mare that had had removed the right portion of her udder owing to a mammitis. The amputation had occurred a year prior to the present observation. The remaining portion of the gland was much enlarged, the size of a child's head; its surface was irregular, nodulated, and the presence of the Botryomyces was demonstrated.

Tuberculosis of the Eye and Brain in a Calf.—Fischoeder, in the *Zeitschrift für Fleischhygiene*, examined a calf weighing 175 kilos. (say 390 lbs.) that was killed at the abattoir of Bromberg. It had appeared to be weak, to be in a

condition of stupor, and had always a tendency to fall towards the right. On *post-mortem* examination the bronchial, mediastinal, præpectoral, brachial, and præcrural glands were found tuberculous. The other organs, more especially the spleen, the kidneys, and the mesenteric glands, were unaffected, but the left ear and the brain showed the following lesions. The left eye, slightly protruding from the orbit, showed towards the nasal canthus, close to the junction of cornea with sclerotic, a thickening the size of a bean. The cornea in this region was opaque. From here an oval tumour, flattened, 1 cm. long and 5 mm. thick, extended as far as the retina, including all three tunics of the eyeball, and enclosing numerous miliary tubercles. In the brain upon the lateral faces of the posterior pillars of the trigone (probably the fornix, though trigonum is a name applied to some half-dozen different spots in the cerebrum—Ed.) and neighbouring parts were nodulated firm new growths with tuberculous foci. This case is interesting, owing to the youth of the patient, and the age of the lesions and their unusual size.

A Case of Equine Anthrax following Infection by the Intestinal Lymphatics.—A. Fiorentini publishes in the *Centralbl. fiir Bakteriol.* the results of a *post-mortem* examination made upon a horse that had died from an attack of anthrax of some eight or ten hours' duration. Only few bacilli were found in either spleen or liver, but the *B. anthracis* was found in great quantities in the mesenteric lymphatics. Sections showed that the germs were chiefly in the structure of the glands and not in the blood-vessels. Fiorentini is inclined to believe in this case that the spores had entered from the intestine and reached the lymphatic glands by wounds caused by sclerostomes which were present. He insists upon the necessity of examining the lymphatic glands of the mesentery in all cases of anthrax.

Reviews.

Median Neurotomy in the Treatment of Chronic Tendinitis and Periostosis of the Fetlock, by C. Pellerin. Translated with Additional Facts relating to it by Professor A. Liautard, M.D., V.M. 61 pp., 2 plates. Wm. R. Jenkins, New York.

Pellerin, whilst associated with the Chair of Surgery at Alfort, first performed the operation upon a mare suffering

from chronic tendinitis. In all some sixty-one operations are recorded by different surgeons, and the following details are interesting. Of the results accruing from the operations there are "13 recoveries in 13 cases of chronic tendinitis; 2 recoveries, 5 improvements, and 1 failure in 8 cases of chronic tendinitis with lesions at the coronet; 2 recoveries and 1 improvement in 3 cases of periostosis of the fetlock; 4 recoveries, 2 improvements, and 1 failure in 7 cases of cartilaginous calcification (side-bones); 6 recoveries and 2 failures in 8 cases of phalangeal exostosis (ring-bones); 15 recoveries, 1 return of the lameness after four months, 1 failure followed by accident, and 1 case without after-information, out of 18 cases of navicular disease; 1 recovery in 1 case of old lameness after an operation for deep punctured wound of the foot; and, to finish, 2 recoveries (?) and 1 failure in 3 cases of shoulder lameness." This quotation will give an idea of the scope of the operation, and one must admit that such a record is sufficient to justify M. Pellerin in bringing the operation before his colleagues, and Professor Liautard in giving it in so eminently readable a manner to English-speaking veterinarians. It is to be hoped that some one will be sufficiently enthusiastic to work out the distribution of the plantar nerves, and note the exact distribution of the ulnar branch of the external nerve. Further, we may note that the author is doubtful as to the value of the operation in ring-bones and side-bones if pain is manifested on the outer side; relief is given if the internal part is painful, but owing doubtless to the nerve impulse being transmitted by the ulnar nerve from the outer side of the limb, the animal is not rendered insensitive after operation upon the median alone. Since the present work was written, Alvy, whom if we mistake not succeeded the author at Alfort, has sectioned the ulnar nerve when no relief followed median neurectomy. Hence the area supplied by the ulnar, and the possibilities of such an area being the seat of the pain, must be reckoned with. We are inclined to agree with our author, that the so-called recoveries of shoulder-lameness following the operation were to be explained on the hypothesis of mistaken diagnosis. Very full and explicit directions are given of the operation, the regional anatomy is described in a succinct form, and abnormalities likely to occur are specified; and we think that those who desire to become acquainted with an operation that is not uncommonly made use of on the Continent, and of which we have published annotations

in the "Month's Progress," cannot do better than buy the work. It is very neatly got up and beautifully printed, though the proof reading in a few instances has been careless, and the translator was evidently hard put for a word when he found "clandication" (page 15), the meaning of which we do not know. We presume *claudication* was the word in the original, which is to be interpreted "lameness" or "halt." The price of the work is not stated, an all too common fault with publishers; but we believe that it may be obtained for one dollar.—A. E. M.

Science Notes.

Sunlight as a Disinfectant was the text of the president's address to the Chemical Section of the British Institute of Health at its last meeting. After citing the action of the violet and ultra-violet rays on the skin and the well-known work of Marshall Ward on the method by which they act as disinfectants, the speaker dwelt on the causes of fading when colours are exposed to light, and on the action of luminous rays on carbon compounds and on urine. When certain organic substances like carbonic acid, some of the alcohol series, or oxalic acid, are exposed in a moist state to the sun, peroxide of hydrogen is produced. Of two samples of urine known to be free of peroxide of hydrogen, one was placed in the sun and one in the shade. At the end of six days the first was still clear, and contained peroxide, whilst that kept in the shade was full of bacteria, and contained no peroxide. Even after twenty-three days' exposure the first sample showed no signs of putrefaction, whilst the other was entirely decomposed. Samples previously exposed to the sun soon become covered with growths, and lose their peroxide when placed in the shade. The speaker concluded that the violet and ultra-violet rays are therefore able in many cases to produce in organic solutions peroxide of hydrogen. This peroxide readily parts with one atom of its oxygen to the organic material, becoming reduced to the state of water, while at the same time the microscopic organisms formed in the water of rivers, &c., are destroyed.

The Roentgen Rays are regarded by Mr. Tesla as streams of material particles. He says there is little doubt that

the cathodic current is composed of little particles of matter launched from the electrode with great velocity. This velocity can be estimated, and quite explains the mechanical and thermic effects produced by the rays in objects near the tube. It is also known that the "beams" of matter thus projected act like non-elastic bodies, in fact like streams of infinitely small particles travelling in straight lines. Their velocity is probably seventy miles or more per second. Matter travelling at so high a speed should have no difficulty in penetrating intervening obstacles if mechanical laws are applicable to the cathodic current. The material constituting the current is reduced to a primitive form hitherto unknown, for such velocities and such violent shocks had probably never been studied nor even realised before these extraordinary manifestations were observed. The important fact first noted by Röntgen and confirmed by subsequent observers, viz. that bodies are more opaque to the rays in proportion to their densities, is best explained by regarding the rays as currents of matter in motion. This relation between opacity and density is of great importance in determining the nature of the rays, because it does not exist in the case of rays of light, and should therefore not be found in the same degree either in their case or in that of rays of related frequency. A decisive proof of the existence of material currents is furnished by the formation of shadows in space at a certain distance from the tube. Such shadows are only known to be formed, under the conditions described, by currents of matter.

Iodine in the Animal Body forms the subject of an interesting paper recently published by Mr. Halliburton. As is well known, the disease called myxœdema is due to some change in the thyroid gland, and injection of thyroid gland extract (from certain animals at any rate) cures the disease. How is this curative action of thyroid extract to be explained? The answer undoubtedly is, by the chemical constitution of the extract. E. Baumann and his pupils find in the thyroid juice a substance hitherto unknown as a constituent of the animal body, viz. iodine. It varies greatly in quantity, averaging in man from ·3 to ·9 per cent. of the entire weight of the gland, whilst in the child it is only present in extremely minute quantities. The dried thyroid of the sheep contains from ·9 to 1·5 per cent., that of the dog only traces, and that of the calf very little. If iodine is the active principle in thyroid extract, the element itself should be able to replace the extract in the treatment

of myxœdema; but experiments give conflicting results, in some cases iodine acting as well as the extract, in others producing no effect. Whatever its action, however, the discovery in the organism of a hitherto undiscovered element is a matter of great interest. It should be noted that man and the higher animals are not alone in this peculiarity, Drechsel having found iodine in certain marine invertebrates at the same time that Baumann discovered it in man.

Longevity of the Horse.—The *Eleveur* describes a mare, belonging to a M. de la Ferronays, which after attaining the advanced age of thirty-seven had given birth to a foal! Another mare aged thirty-five is reported to have recently borne offspring. Although Pliny claims that the horse lives to the age of sixty, and Buffon cites a specific case which reached fifty, the foregoing instances are certainly exceptional in point of age. Amongst well authenticated cases, that of a horse belonging to an English Hussar regiment is one of the most striking. It entered service in 1833, aged seven, and died in 1862, aged thirty-six.

Carrier Pigeons in Country Practice.—A Scotch medical man—Mr. Harvey—has recently been employing carrier pigeons in his practice with most gratifying results. He carries a number with him, and in case of medicine being urgently required writes his prescription, fastens it under the bird's wing, and straightway launches the pigeon into space. The arrival of the pigeon is notified by an electric contact in the dovecot; the assistant ascends, secures the message, dispenses the medicine and despatches it by special messenger. Where the condition of a patient threatens relapse, or complications are feared, a pigeon or two are left at the house ready to be despatched should the doctor's services be suddenly required. This system is stated to work very satisfactorily, especially in scattered practices.

Influence of Certain Agencies on the Bactericidal Properties of the Blood.—Continuing experiments undertaken in the laboratory of M. Loukianow, Mr. London has studied the following agencies:—1. Starvation. Some rabbits were deprived of all food for ten days. At the end of this time the bactericidal properties of the blood had disappeared, or at least notably diminished. Normal feeding was resumed, and as the animal gradually made up the lost weight its blood recovered its former qualities. 2. Liga-

tion of the ductus choledochus.—This operation seemed to increase the bactericidal properties of the blood to a slight extent. 3. Ingestion of hydrochloric acid.—This method gave no positive results in the hands of Fodor. Mr. London thinks that the bactericidal value is slightly increased, but only at a certain period after digestion, and it seems certain that small doses frequently repeated really diminish it. 4. Ingestion of bicarbonate of soda.—Confirming Fodor, Mr. London finds that small doses frequently repeated increase the bactericidal effects. 5. Free bloodletting and removal of the testicles seem without effect.

A Two-headed Tortoise was described some years ago as having been found on the banks of a river in Connecticut. *Science* now publishes its complete history. Its scientific name was *Chrysemys picta*, and while it was considerably larger than most of its species, it had two heads, the usual number of legs, but only one tail. The interior of the carapace was furnished with two digestive and nervous systems, two hearts, two sets of breathing apparatus, two muscular systems, and two skeletons; finally, the monster had two volitions, each head having its own character,—one being lively, timid, and irascible; the other phlegmatic. Movements were not co-ordinated, the right and left sides acting separately, and not infrequently in opposite senses. Whilst one of the heads slept the legs of the other side would sometimes move the carapace some distance in one direction; but if both were engaged locomotion became extremely difficult, one side often opposing the other. In swimming matters were better arranged. Owing to a cat wounding the neck of the left tortoise it died. The right side survived it two hours and a half.

The Assimilation of Iron Salts.—Herr Justus Gaule publishes in the *Deutsche medicinische Wochenschrift* two articles of considerable interest, not only for biological chemistry, but also for the treatment of chlorosis and analogous conditions. They seem in large measure to answer the much-contested points as to which of the organic or mineral salts of iron are absorbed by the organism. In order first to determine what becomes of organic salts of iron which enter the digestive tube, the author administered preparations of them to rabbits. Two hours after giving a preparation termed carniferrine the subjects were killed, and fragments of the stomach, small intestine, liver, and spleen treated with sulphide of ammonium. The black

precipitate of sulphide of iron thus formed showed that the duodenum alone had absorbed any iron, and that its presence could only be demonstrated in the spleen. It appears from this the duodenum alone absorbs iron, which is not necessarily conveyed to the liver by the portal vein. Being absorbed like the fatty elements of food by the intestinal epithelium, not simply by diffusion, but by the activity of the cells themselves, it is hurried into the circulation by the lymphatic stream, and passes thence into the spleen. Microscopic examination of the intestinal mucous membrane and special experiments in living animals have proved this conclusively. It has also been shown that absorption of iron by the lymph commences about forty minutes after its ingestion, attains its maximum about ten to twenty minutes later, and then diminishes. It is impossible to isolate this iron from the blood, as it is immediately fixed in cells of special kinds in the form of grains of varying size. So far as inorganic salts of iron are concerned we know that they are transformed in the stomach into chloride of iron by the hydrochloric acid therein contained. Giving chloride of iron mixed with food to his rabbits, the author found that it formed, with some hydrocarbon contained in the stomach, a compound insoluble even in the small intestine. The solution of this material before its absorption in the duodenum is apparently due to the transformation of the hydrocarbon into sugar by the diastatic ferment of the pancreatic juice which is here poured into the small bowel. This explains why iron is only absorbed from the small intestine. The experiments as a whole threw considerable light on the process by which the red corpuscles draw their supply of iron from the food ingested. JNO. A. W. D.

Army Veterinary Department.

VETERINARY-CAPTAIN E. H. Kelly arrived 31st ult. on sick leave of absence from South Africa.

Veterinary-Captains F. Raymond and A. F. Appleton and Veterinary-Lieutenant W. J. Tatam embark for India on the 11th inst.

Veterinary-Lieutenant R. H. Holmes arrived at Aldershot from Okehampton on the 5th inst.

Veterinary-Lieutenant A. C. Newsom arrived at Edinburgh for duty with the 6th Dragoons on the 8th inst.

Contagious Diseases of Animals in Great Britain.

Pleuro-pneumonia.—In some of the agricultural papers a paragraph appeared lately stating that an outbreak of this disease had occurred on a farm near Campbeltown, in Argyleshire; but as no official announcement of this has appeared in the *London Gazette* we suppose the existence of contagious disease has not been confirmed. We have been informed, however, that the whole of the cattle on the farm are detained by the Board of Agriculture for further observation.

Swine Fever.—According to the published returns relating to this disease, there has for some weeks been a marked decrease in the number of outbreaks as compared with the corresponding weeks of last year. The average weekly number of outbreaks for the thirty-eight weeks ending September 19th has been just over 112; but we find, on looking over the returns, that in no week since that ending July 4th has the number of outbreaks been up to 100, the numbers having been mostly between 80 and 90 a week. This looks as if the Board of Agriculture was at last making some progress towards stamping out the disease. Several causes may have assisted in reducing the number of outbreaks recently. Among these may be mentioned restrictions on movement, which have lately been more freely applied by the Board to districts in which disease exists, and the wider interpretation of the term in contact or exposed to infection, as evidenced by the greater number of pigs slaughtered. In thirty-eight weeks this year, with 4271 outbreaks, there were 62,258 pigs slaughtered as diseased or exposed to infection; while in the corresponding period of last year, with 128 more outbreaks, the number of pigs slaughtered was 41,267, or nearly 21,000 fewer. Another circumstance which may have helped to reduce the amount of disease is the decrease in the number of pigs in the country, more particularly of those kept for breeding purposes, which according to the abstract of the Agricultural Returns amounts to a decrease of 5 per cent. This decrease in the number of pigs is, no doubt, the result of the low prices which have existed for some time, and has therefore rendered both pig breeding and feeding less profitable than they were twelve months ago.

Anthrax.—Since the commencement of the present year there have been 366 fresh outbreaks of this disease, an increase of 52 as compared with the corresponding period of last year. Although there has been this increase in the number of outbreaks, there has been a decrease in the number of animals attacked. The number attacked this year has been 658, as compared with 719 last.

Glanders.—With regard to this disease there has been a marked decrease both in the number of outbreaks and horses attacked. There have been 578 outbreaks this year and 925 horses attacked, as compared with 758 outbreaks and 1214 horses attacked last year. London and the adjoining counties have always had the greatest amount of glanders, and the decrease above referred to is in a large measure due to the action now taken by many of the large London horse owners in dealing with this disease. Instead of keeping suspected horses alive until they showed unmistakable symptoms of the disease, and had very often infected others, many of these suspected horses are now tested with mallein, and if they react they are at once got rid of. It is to the interest of large horse owners, and they can afford to eradicate glanders from their stables in this way, but in the case of small owners, men with two or three horses, the loss of one with only knacker's price allowed is a very serious matter, and if Local Authorities all over the country would give the one-fourth value as compensation for every horse affected with glanders as contemplated by the Order of the Board of Agriculture we might hope soon to see this disease very materially reduced if not altogether got rid of.

Rabies.—Although there has been a decrease in the number of cases of rabies this year as compared with last, still the returns are far from satisfactory. According to the *Gazette* return for the week ended September 19th, there were in the first thirty-eight weeks of the present year 411 cases of this disease, 390 in dogs, and 21 in other animals. Last year there were 526 dogs affected, and 44 other animals. Only three years ago the number of cases in thirty-eight weeks was 47, all of them in dogs. With this limited amount of disease the Board of Agriculture might then have issued orders which would have got rid of this fearful malady instead of again allowing it to increase. The Rabies Order gives Local Authorities power to issue muzzling regulations in their own districts, but so long as it remains optional on their part to do so one

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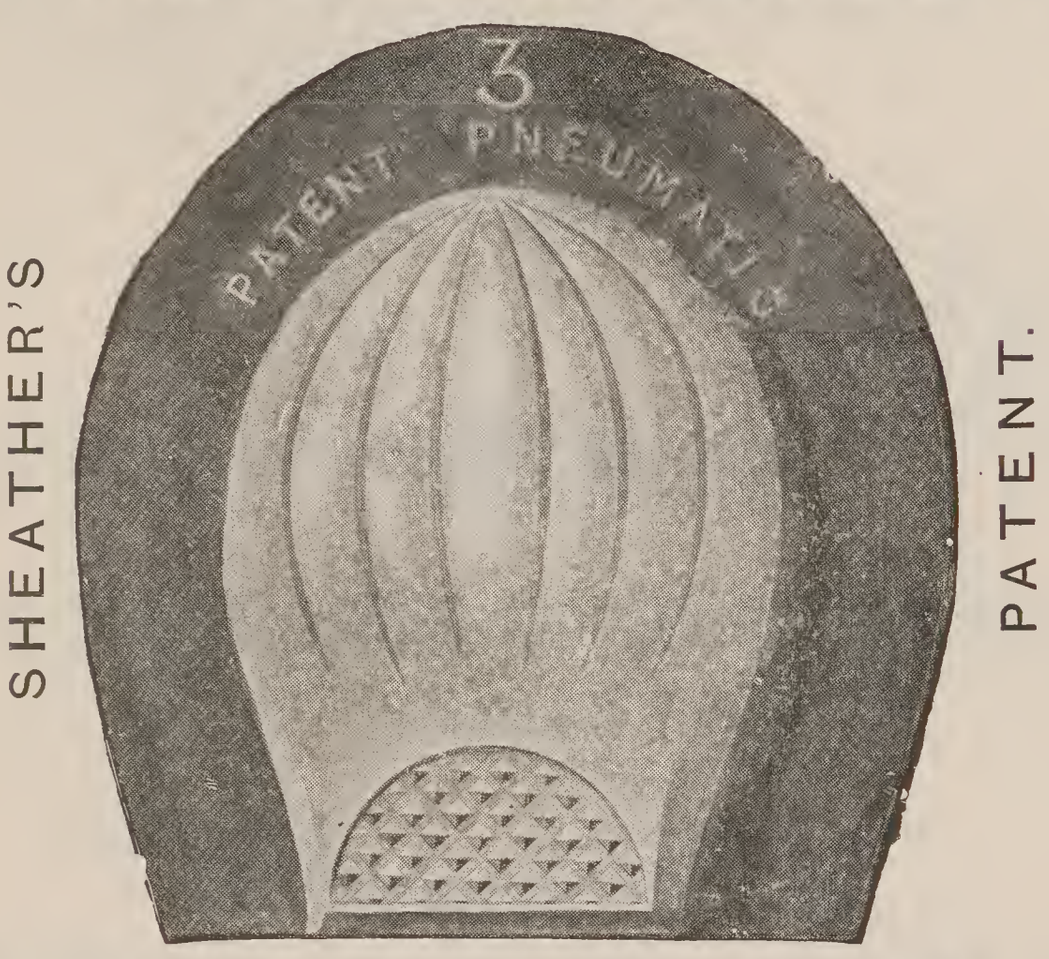

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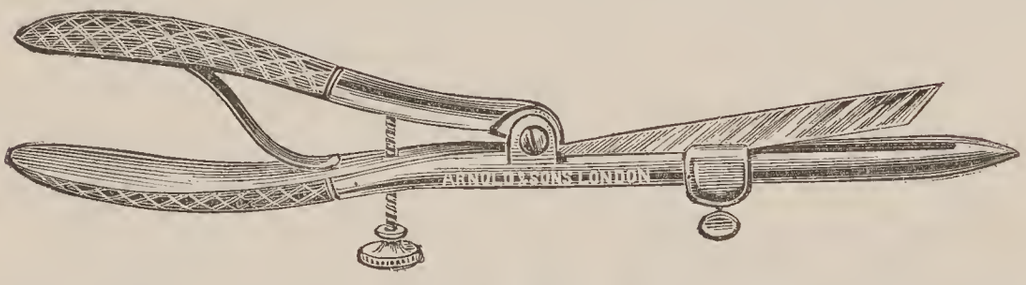


for making the puncture, and the blade shaped somewhat like the concealed knife of a *Bistouri-caché* for enlarging the incision. A screw and slide on the director regulate the depth, and another screw on the handle regulates the extent of the incision.

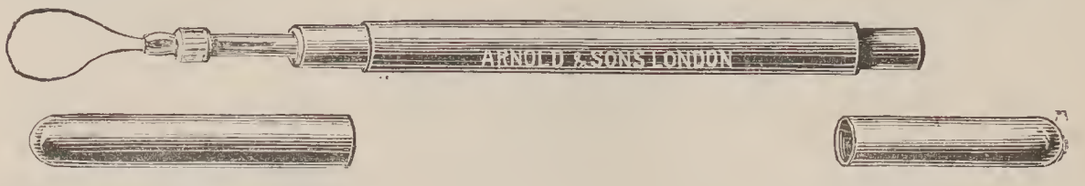
In opening abscesses about the parotid and submaxillary glands, a large and even dangerous incision is sometimes made if the animal struggles. With this lancet such an accident is impossible.

Messrs. Arnold and Sons, West Smithfield, London, are the makers.

INSTRUMENT FOR REMOVING FOREIGN BODIES FROM THE EYE.

I have had submitted to my notice a handy little instrument invented by Mr. J. Simson, of Holbrook, Suffolk, for the purpose of removing foreign bodies, such as oat flights,

&c., from the eye. It consists of a simple loop of fine wire attached to a holder, and seems admirably adapted for the purposes required of it. The receptacle at end is intended



for spare wires, and can also be used as a case for clinical thermometer. It is made by Messrs. Arnold and Sons, London. A. Ernest Shorton, M.R.C.V.S., Ipswich.

A Correction.—The article on Braxy in our last issue was published in Germany in July, 1896, and not 1886, as printed. It therefore represents the result of the very latest investigations into this hitherto obscure disease.

Notices to Correspondents.

To ensure the publication of communications in the coming number they should arrive by the 15th of the month.

Will Contributors kindly note that, for illustrative purposes, the following are the best processes in order of merit?—Good Indian ink line-drawings, on stout white paper or cardboard, crayon drawings, photographs with good contrasts of light and shade, bold sketches in sepia. Sketches in lead pencil are very difficult to reproduce, and are not satisfactory.

The drawing should be considerably larger than the subsequent illustration is to appear; the reduction fines the lines and greatly improves the appearance.

Letters, Articles, Reports of Cases and of Veterinary Meetings, should be addressed to The Editor, 'Veterinarian,' Royal (Dick) Veterinary College, Clyde Street, Edinburgh.

The Editor does not hold himself responsible for the sentiments expressed by contributors, nor can he undertake to return rejected papers. He will be happy to advise and assist as far as possible, by letter, correspondents who may desire information regarding cases, instruments, or books.

Important.—The proprietors of the *Veterinarian* invite suggestions and criticisms from their readers tending to improve the Journal. Please address all letters to the Proprietors, care of Messrs. Adlard and Son, 22½, Bartholomew Close, E.C.

JOURNALS, MAGAZINES, NEWSPAPERS, ETC., RECEIVED.

Recueil de Médecine Vétérinaire. Annales de Médecine Vétérinaire. Revue Vétérinaire. La Clinica Veterinaria. Berliner Thierärztliche Wochenschrift. Zeitschrift für Veterinärkunde. Agricultural Journal (Cape Colony). *Live Stock Journal. The Veterinary Record. The Veterinary Journal. The Lancet. The British Medical Journal. The Field. Pellerin's Median Neurotomy*, by Liautard; *Circulars* 9, 12, and 13; *Cornstalk Disease and Rabies in Cattle, and Tapeworms in Poultry*, from U.S. Department of Agriculture. *Relazione e Schema di Regolamento sulla Polizia Sanitaria Veterinaria. Lehrbuch der Thierärztlichen Geburtshülfe. Traité de Zootechnie Spéciale. Lehrbuch der Vergleichenden Pathologie und Therapie des Menschen und der Hausthiere. Die Krankheiten des Hundes. Der Kranke Hund. Oliphant's Law of Horses, &c.*

Letters and communications have been received from Messrs. R. Wall, Wallis Hoare, F.R.C.V.S., W. Scott, M.R.C.V.S., A. Hodder, H. K. T. Tasker, A. J. Williams, &c.

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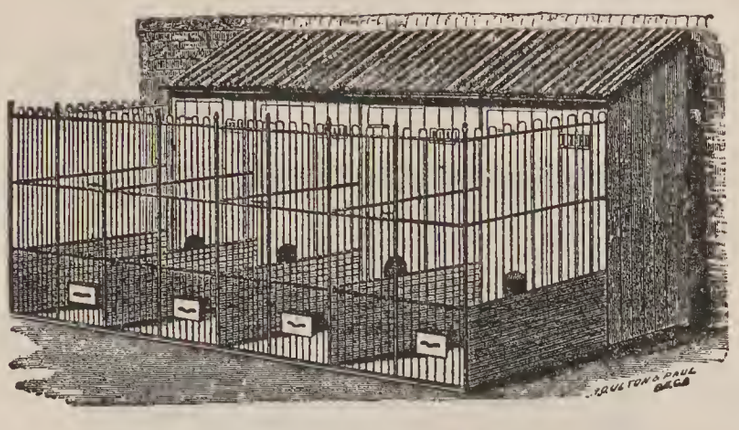

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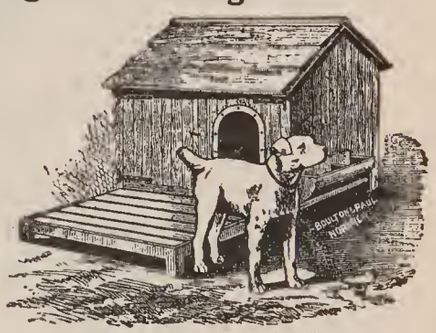

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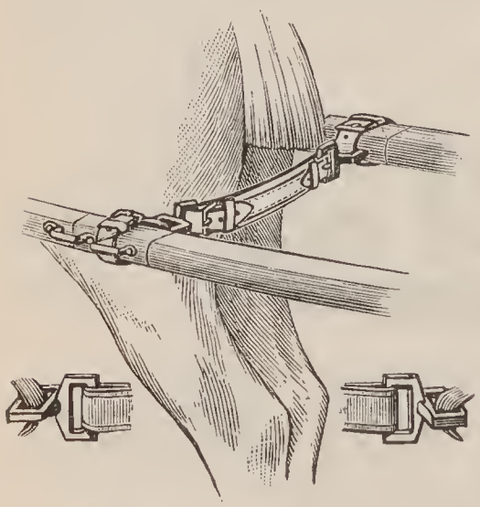

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THE VETERINARIAN.

REPORTS OF SOCIETIES.

SEPTEMBER, 1896.

MIDLAND COUNTIES VETERINARY MEDICAL ASSOCIATION.

The quarterly meeting of this Association was held at the Grand Hotel, Birmingham, on the afternoon of Tuesday, August 11th. The President (Mr. F. L. Gooch, of Stamford) occupied the chair, and there were also present Messrs. W. Hunting, London ; Blakeway, Malcolm, Taylor, Gibson, Parker, Birmingham ; Burchnall, Loughborough ; E. G. Crowhurst, Leamington ; Trigger, Newcastle ; Green, Dudley ; Carless, Worcester ; Kidd, Melton Mowbray ; Collett, West Bromwich ; Over, Rugby ; Grasby, Daventry ; Brooke, Handsworth ; Jones, Leicester ; H. J. Dawes, Hon. Sec., West Bromwich ; Beddard, Wolverhampton ; Wartnaby, Burton-upon-Trent.

Apologies.

The Hon. Sec. announced the receipt of letters and telegrams regretting the inability of the senders to be present from the following : Professors Penberthy, Pritchard, Sir H. L. Simpson, Messrs. Barling, Barrett, Carless, Aris, Mason, J. R. Green, Woolston, Wragg, Olver, Bambridge, Merrick and others.

A Personal Explanation.

Arising out of the minutes of the previous meeting (which were duly read by the Hon. Sec.) was a matter in regard to which Mr. Hunting sought permission to render a personal explanation. The Association, at their last meeting, drew attention by a resolution to the fact that he, as editor of *The Record*, had declined to insert a communication for the Hon. Sec. The explanation which he (Mr. Hunting) had to offer was this. He was at all times willing to publish the report of any meeting that may be sent to him by the Association, but he held that he had a perfect right to decline to publish a mere resolution without any accompanying account of the meeting at which it was passed. If he had offended the Association he was willing to express his regret, but under the circumstances of the last election when so many misrepresentations were being made, he thought he

was justified in not publishing a resolution, passed within so near the date of the polling, when there was no accompanying statement as to how many were present at the meeting, or what arguments led to the opinion.

After a few further observations the subject dropped.

Vote of Condolence.

Mr. Trigger said that before passing on to the business on the agenda, he wished to discharge a very melancholy, but as he thought, necessary obligation. A deep gloom had been cast over the Association by the loss they had just sustained in the painfully sudden death of their old and valued friend Mr. J. Coe. As the nearest practitioner to Mr. Coe, he had better means than most of them of judging his character. He was a man of an exceptionally kindly and genial nature, and he had justly won the esteem and regard of every member of the profession who knew him. Personally, he (Mr. Trigger) grieved bitterly for the loss of a true friend and kindly neighbour, and above all an honourable opponent, and he begged to move that this Association request their Hon. Secretary to convey to his son (who succeeds him in the practice) and to the other members of his family their heartfelt sympathy in their sad bereavement.

Mr. W. S. Carless, who said he had known and admired the deceased gentleman from his earliest boyhood, seconded the resolution, which was carried *sub silentio*.

Nominations and Election.

Mr. W. Grasby nominated for membership of the Association Mr. Harry Sharman Reynolds, of Daventry.

The Hon. Sec., on behalf of Mr. J. R. Green, of Alfreton, nominated Mr. T. Ludlow, of Mansfield.

The Hon. Treasurer nominated Capt. Marriott, of the Army Veterinary Department.

The above names, according to rule, will be submitted for election at the next meeting.

The Hon. Sec. moved the election of Mr. George De Lisle Tinkler, of Syston, which was seconded by the Chairman and carried unanimously.

Professional Matters.

The Hon. Sec. submitted the circular letter from the Southern Counties Veterinary Medical Association, respecting (1) the fees paid to veterinary surgeons for giving evidence in courts of justice; and (2) the question of exempting members of the profession from serving upon juries.

Mr. W. S. Carless thought they ought to take some steps in the matter. Serving on juries was often a great hardship on a professional man, and he thought they ought to be exempt. With regard to fees in criminal cases he always had a guinea, and make an understanding with the solicitor who employed him before going into the witness-box.

The Hon. Treasurer thought they were pretty well all agreed upon the jury matter, but the question was, How were they to get exempted? He understood that it could only be done by Act of Parliament, and as they were already well represented on the Council, they ought to rest assured that when the time came steps would be taken to advance their interests. He thought it was premature to do anything yet, although they might pass a resolution, asking the Council to keep the matter in view and bring it forward for consideration at the proper time.

Mr. Hunting argued that it was all very well for the educated classes to get out of serving on juries, but it was a perilous proceeding for all Englishmen of education to attempt. The end of it would be that there would be nobody left to serve on a jury but a greengrocer and a crossing sweeper, and he would like to know what things would come to then. If they took a serious view of the subject and looked a little higher than mere personal likes and dislikes, they would drop all references to the question of exemption from juries.

Mr. Burchnall, reverting to the question of fees for professional evidence, expressed the opinion that it was a matter over which the judge had absolute control.

Mr. E. G. Crowhurst observed that before he went to Leamington he was always sure of a guinea for giving evidence, but now he could only get half-a-guinea.

Mr. Trigger agreed that nothing short of an Act of Parliament could effect the jury question. They might depend upon it that when the revision of the jury list came forward again, the interests of the profession would be jealously watched by the Council. With regard to the question of fees, he thought that was a matter entirely in their own hands. They should simply decline to give evidence until they got such a fee as they wanted.

The Chairman said that as no one seemed anxious to move in the matter, he should propose that the letter be allowed to lay on the table. This was seconded by the Hon. Sec. and carried *nem. con.*

The Walley Memorial Fund.

Mr. J. Malcolm proposed the following resolution, standing on the agenda in his name, "That a sum of money be voted to the Walley Memorial Fund." He said: I feel sure I shall have the support of you all in this motion. I don't think it is necessary for me to say anything about the late Professor Walley and what he did for the profession of which he was so bright an ornament. It has been gone over at previous meetings, and I think the fact that this proposed memorial is to take the form of a prize to be awarded to the students from any British veterinary College who pass the best examination at Class C in the four years' course, will make it appeal to members of the profession in the Midlands, as it has already done in other parts of the country.

We all know what a stimulus a prize gives to the veterinary student. I remember in my day it induced a considerable number to work a good deal harder than they would otherwise have done, and I have no doubt the same state of things prevails to-day. You will remember that Professor Walley was essentially a Midland man. He was the teacher of many of us and had many friends in this Association. The only question, to my mind, that seems open for discussion is the amount that should be given towards the memorial. I have been talking over the matter with our treasurer, who, I think, should be first consulted in matters of this kind, and he thinks that the sum of 10 guineas could well be spared from the funds of the Association towards the object I am referring to. I therefore move that the sum of 10 guineas be voted to Walley Memorial Fund.

The Hon. Treasurer: I have much pleasure in seconding the motion. Professor Walley was a warm-hearted member of this Association, and read many good papers before us. We have about £160 in hand, and I think we can easily afford 10 guineas for so worthy an object.

The motion was put to the meeting, and without any discussion, was unanimously agreed to.

SHOULDER LAMENESS.

By William Hunting, F.R.C.V.S.

Until we are able to make a reasonable diagnosis the treatment of lameness is most unsatisfactory. It is even more unsatisfactory to the surgeon than to the owner of the disabled animal, for we recognise that our treatment is inexact and our knowledge of the lesion very indefinite whilst he, with simple faith, looks only at the result—which may be good. It may be for instance that we diagnose a case as "foot-lameness." We are tolerably certain that the lesion is in the foot but its exact nature and position is not certain. Treatment is applied to the foot and recovery follows. Such a case gives satisfaction to the owner, but not to the veterinarian who takes a really scientific interest in his work. He would like to know the exact position and nature of the injury causing lameness, so that he might apply what remedies he possessed with precision. He would, in short, like his treatment to be scientific and rational instead of empirical and dubious.

This desire for information was what induced me to accept your President's request that I should offer some question for discussion at this meeting. I have often been puzzled with cases of "shoulder lameness" in horses, and it occurred to me that the Midland V.M.S. might assist, not only me but the whole profession, in making clearer the conditions which give rise to some of the lamenesses traced to the region of the shoulder. You will see then, gentlemen, that my intention is not to

give but to extract information, and you will I hope not disapprove the line I have taken.

I propose only to try and arrange the subject in a manner most convenient for your consideration. I shall leave those conditions which are palpable and evident causes of lameness with merely a mention, but I shall freely acknowledge my ignoranee of other conditions which are identified by certain symptoms but which are capable of more than one hypothesis as to their origin.

In connection with lameness, the region of the shoulder must include the wall of the chest from the first to the eighth rib, and the muscles attaching the fore limb to the body. It includes the two bones—scapula and humerus with their joints, muscles, nerves, and vessels. This is a very large region with a most complex structure. Deep seated lesions are so buried under enormous masses of muscle and protected by two large bones that nothing definite is detectable by the most careful manipulation. Where we cannot feel or see the lesion we can only judge by alterations in the position or action of a limb. I am afraid that different lesions in the region of the shoulder are capable of producing appearances so similar that we cannot differentiate between them. I also fear that secondary changes so rapidly set in that we may mistake effects for causes—especially is this possible in the case of muscular wasting.

The most evident causes of lameness traceable to the region of the shoulder are fractures. Of these I need say nothing. They are generally diagnosable and seldom worth treating except in foals or horses kept for stud purposes.

The scapulo-humeral joint is of course subject to the wounds and injuries which affect other joints. To only one of these will I now direct attention, viz., dislocation. This is said to occur, and some reported cases ought perhaps to be convincing. Not merely because I have never seen one, but because the surroundings of the joint seem so strong and unyielding as to render such an accident impossible, I ask if anyone here to-day can supply corroboration of the very scant records of this serious lesion. I can quite understand extreme violence, such as might result from a fall from a great height, or a blow inflicted by a heavy weight in motion—say another horse or an engine—causing dislocation, but I should then expect accompanying fracture of the scapula, and very grave lesions of the connecting structures. Pure and simple dislocation or luxation of the humerus on the scapula I cannot realise.

Injuries to the point of the shoulder are not uncommon. Contusions affecting only the skin and superficial muscular layers cause temporary lameness, and are recognisable by the classical symptoms of heat, pain, and swelling. More serious contusions injure the tendon of the flexor brachii and give rise to lesions in the bursa

which surround the tendon and enclose the bicipital groove of the humerus.

The bursa and tendon of the flexor brachii are, on post-mortem examination, not unfrequently found to have suffered extensive pathological changes—the most common being ossification of the tendon, erosion of the cartilage covering the bicipital groove, and the formation of furrows on the gliding surfaces of both bone and tendon, This of course indicates a case of chronic lameness, and the symptoms shown during life are not always sufficient to enable us to locate the mischief.

In a recent acute case we are assisted by the local inflammatory symptoms, some swelling and tenderness on pressure. When these have abated and marked lameness remains, is there any peculiarity of position or movement that guides us in locating the injury? The chief symptoms are inability to bear weight on the limb and great difficulty in moving the leg forward. At rest the knee is bent and the foot placed behind the line of the opposite foot. These symptoms certainly suggest some lesion of the shoulder joint, but they are the same whether the scapulo-humeral articulation is the seat of mischisf or whether the tendon and bursa of the flexor brachii be diseased. Perhaps it may be said that exact differentiation between disease in the one place and in the other is of little practical importance, for in both recovery is unlikely, and treatment would vary only in the position of a blister—and vary very little. This is to a great extent trne, but as disease of the joint is even more serious than disease of the bursa exact diagnosis is important, as it might enable us to give a more certain prognosis of the case. It was said by Professor Barlow that pressure over the joint, applied between the tendons of the antea and postea spinata would elicit signs of pain when the joint was the seat of mischief, whilst pressure applied to inner and outer borders of the biceps tendon would afford indications of disease in the bursa. During the acute inflammatory condition this is possibly correct, but my experience does not warrant me in saying that chronic cases respond to these manipulations. In fact I am inclined to think that pressure with the fingers in cases of shoulder lameness gives very unreliable results—some horses flinch when no diseased spot is touched whilst some show no response when disease really exists.

Dragging the toe is undoubtedly a sign of lameness located in the region of the shoulder, but it is not a symptom indicative of lesion in any special part. It merely shows an inability to raise the leg. Bringing the limb forward with an outward circular sweep is also a common sign of shoulder lameness but it again only indicates a want of power to raise the limb, which may be due to pain in various structures or to want of power in certain muscles. Probably this circular sweep of the limb in all cases of very marked lameness may be accep-

ted as indicating a lameness seated in the region of the shoulder. In less marked, but still acute, lameness I am quite certain that this form of movement is seen in cases when the lesion is not in the shoulder. I have observed it in conjunction with splints which interfered with the knee, and also in some cases of foot lameness. Action alone cannot be trusted to guide us to the seat of shoulder lameness.

Probably in no part of the body do lesions of muscle so often cause lameness as in the region of the shoulder. We know that the flexor-brachii suffers from external injury and it is probable that it may also be damaged by sprain. I cannot say that I have ever met with a case in which I traced lameness to this cause. That the antagonistic muscle—the extensor brachii—is sometimes injured I know. I have seen it wasted frequently, but whether such wasting takes place from primary disease or injury is by no means clear. More than one definite cause of lameness in the shoulder region is accompanied by a letting down of the lower end of the humerus, so that the leg hangs and the extensor brachii is stretched. When such cases are prolonged wasting of the extensor muscle always results, and the animal regains sound action long before the muscle returns to its original bulk.

There is a form of lameness in which pressure on the lower part of the levator humeri causes spasmodic contraction of the muscle. In two cases where I have met this symptom there has been also evidence of pain on depression of the neck. In both a post-mortem examination disclosed disease affecting the fibro-cartilagenous disc and articular surface of one or more cervical vertebræ. In another case, the chief symptoms of which were a crouching position of the body between the fore limbs and a want of co-ordination of movement in the shoulder muscles, a post-mortem examination showed disease of the articular surfaces of the 2nd and 3rd dorsal vertebræ. It is difficult then, when the action of muscles is alone the indication of lameness, to be certain whether the intrinsic structure of the muscle is at fault or its nervous supply. It is also certain that movement of a region may be defective or irregular as the result of intense pain emanating from a distant part—increased by motion.

There is a marked shoulder lameness in which the whole region seems to drop. From the striking position of the elbow, which may be six inches or more lower than its fellow, such cases have been termed "dropped elbow." The knee is bent and the fetlock flexed so that only the front of the hoof touches the ground. Messrs. Willis, Byerley, H. G. Rogers and others have discovered fracture of the first rib as the only lesion visible on post-mortem examination in these cases. A first look at such a case would suggest paralysis of the extensor brachii, but if the limb be straightened by holding the foot firmly on the

ground and forcing back the knee, the elbow is raised to its normal position and the extensor muscle presents no sign of disease that can be seen or felt. Such cases are so distinctive that they have been diagnosed during life and the diagnosis verified by post-mortem examination. Some of them exist for weeks or even months without indication of returning soundness and the post-mortem discloses a united fracture of the first rib. Others, after exhibiting for some weeks quite as acute symptoms as the incurable cases, gradually regain the power to stand on the foot, then to move the limb forward with little difficulty, and finally become quite sound and resume work. In my own experience three of these cases have shown a peculiar event. Up to a certain day they have given no sign of improvement; they have required assistance to rise and when standing were incapable of putting the slightest weight upon the foot. On visiting there next day I was astonished to find the horse standing and with care capable of being led out a few yards. The leg is moved forward the foot laid on the ground and progression made somehow. Of course when weight is placed upon the limb there is almost a muscular collapse of the shoulder—but locomotion is possible, whereas the day before it was not. After this, recovery goes on slowly. In every case the horse-keepers told me the same tale. "He made a great row as though struggling to get up, I thought he must have got cast, but when I ran to the box I found him, to my astonishment, up and resting the foot on the ground and when he walked putting some weight on it." I have wondered whether this event could be due to the replacement or displacement of anything or to the breaking down of some adhesions that had taken place.

The cases that recover do not enable us to speak positively as to the leison which caused them. Mr. Willis and Mr. Porch have now under their notice horses which have shown the distinctive symptoms of "dropped elbow," cases of supposed fracture of first rib. These horses have been for some time at work and are going quite sound. Should they have the misfortune to die in their present service a careful post-mortem will be held and one more doubt in the diagnosis of lameness cleared up.

Professor Williams in his "Surgery" gives a very correct description of the symptoms seen in fracture of the first rib. It will be found under the head of "Elbow Lameness" and is traced to sprain or injury of the *triceps extensor brachii.*

In Mr. Dollar's translation of Möller's Surgery are two drawings of shoulder lameness. The one at page 452 represents disease of the bursa of the flexor brachii. The one at page 459 represents paralysis of the radial nerve—both are suggestive of the earlier stages of fractured first rib but neither are exactly it. A position I think diagnostic is seen as recovery progresses—the foot is placed forward resting flatly on the ground and the knee is

flexed—a position only possible when the elbow is below the level of its fellow joint.

There is one more shoulder lameness I must submit for your discussion—the so-called "shoulder slip." Professor Williams describes it as "that peculiar outward slipping movement of the shoulder joint, at each step the animal takes, when the foot of the lame limb is upon the ground, the opposite one elevated from it, and when the weight of the horse is thus thrown upon the lame side. It would appear almost as if the shoulder were out of joint hence the term "shoulder slip." He adds, "In some cases there will be swelling and heat over the course of the spinata muscles; but in the majority of cases actual lameness does not occur until the muscles have become atrophied.

In Möller I find this description—"The disease then is distinguished by lameness when weight is placed upon the limb, by abduction of the limb and by jerking of the shoulder outwards at the moment when the leg is perpendicular. Atrophy of the paralysed muscles occurs later and is most marked in the spinatus and teres muscles." The name of the lameness according to Möller is "paralyses of the supra scapula nerve" and the causes are blows and other injuries, "violent backward movement of the shoulder or of the leg whereby the nerve is stretched."

Möller states that "Section of the tendon of the posteaspinata muscle results in precisely similar lameness, as I have repeatedly convinced myself and have demonstrated to my students."

Williams states the condition mostly occurs in young horses at plough. Möller says nothing of ploughing as a cause, nor does he refer to age as predisposing to it.

The two authorities, you will notice, differ as to the nature of the lesion. Möller believes the nerve to be injured and the muscle then to become paralysed. Williams believes the muscle is first sprained and the atrophy follows. My experience of these cases is confined to two instances—both of which showed extensive atrophy and lameness, but in neither was any history obtainable, the owners having just purchased them. I cannot quite accept the theory of strain, and I do not understand the hypothesis of nerve paralysis, especially as the result of stretching.

One more variety of shoulder lameness has come under my notice—embolism of the axillary artery. The lameness came on suddenly at work and great difficulty was experienced in getting the horse home. The limb was almost paralysed and deathly cold. The horse was put in slings and in twenty-four hours the other fore leg was nearly as bad. Slaughter was at once carried out and a post-mortem examination disclosed the site of the plugged vessel.

In 1849 Percival wrote on lameness. He recognised disease of the shoulder joint and disease of the bicipital

groove, but that was all the definition he attempted. Barlow more distinctly defined these conditions and added a good account of "shoulder slip." We have, I fear, not made much progress since. In fact with the exception of Willis's discovery of fracture of the first rib I doubt whether we have been able to distinguish and classify any further than Barlow. Möller I must confess differentiates more thoroughly than any writer with whom I am acquainted, but I feel a doubt in accepting all his distinctions. It is only fair to add that this author acknowledges the difficulties and in a chapter on "Shoulder Lameness" points out that in many cases where the shoulder is indicated as the region affected, it is impossible to exactly locate the lesion. I agree with him.

Discussion.

Mr. Parker said Mr. Hunting alluding to dislocation of the shoulder said he should be happy to hear of such a case. Well, he had seen one. He assisted in reducing it and the horse got perfectly well afterwards. There was no mistake about it being dislocated, and furthermore, it was at the time reported in *The Veterinarian*. He had also read of other cases.

Mr. Hunting: Was there any diagnostic symptom!

Mr. Parkrr: Yes.

Mr. Wartnaby: Did you use chloroform?

Mr. Parker: No. The case took place about 38 years ago.

Mr. Malcolm said he had listened with much pleasure to Mr. Hunting's paper. It was certainly very difficult, as Mr. Hunting said, to diagnose the exact cause of shoulder lameness. Mr. Hunting had asked them to say whether they had met with a case of luxation, and he (the speaker) was much interested in Mr. Parker's experience. Personally, he had never seen a case, nor anything approaching it. Mr. Hunting had referred at some length to cases of fracture of the first rib, in which there was marked dropping of the elbow, and had also reminded them of cases which were described by Möller as paralysis of the radial nerve characterised by the same symptom. He must say he had had somewhat similar cases, so far as symptoms went, but he had diagnosed quite differently. He diagnosed them as severe strain of the caput muscles. In that condition they found a marked symptom in manipulating the leg, so marked, indeed, that their stablemen could recognise it as well as himself. A horse suffering from this sprain could not bear his leg to be pulled forward, and reared up whenever the caput muscles were extended in that way. The accuracy of the diagnosis was borne out by the subsequent history of the case, in that they always got very marked atrophy of those muscles, which seldom regained their normal bulk, and althongh it usually was a considerable time before the horse was fit to work again, yet in many cases the horse became

practically sound ultimately, and continued so for years. He had not been able to see any of those sudden recoveries.

Mr, Hunting (interposing): The commencement of recovery.

Mr. Malcolm, accepting the correction, and continuing, said he had not been able to notice that in the cases which had come under his own observation. If it were paralysis of the nerve, he could not understand the excessive pain which the horse experienced when the limb was raised, and if it were fracture of the first rib he could not understand the marked localised muscular atrophy. These facts—the immediate excessive pain and the marked sequent muscular atrophy impelled him to believe that they had got severe muscular injury. He had seen a good many so-called cases of shoulder slip, but could say little about their production. He had once a marked case of lameness due to axillary abscess following strangles. The horse ultimately did well and made a rapid recovery. He remembered another case, in which there was a large abscess situated under the *levator humeri*, just above the shoulder joint. The case got on well, and did not need an operation such as he had seen performed for the removal of tumour or abscess in that particular region. In conclusion, he congratulated Mr. Hunting upon his courage in admitting his mistake in the case of foot lameness diagnosed as shoulder lameness—a mistake was not uncommon, but it was more uncommon to have the courage to admit it.

Mr. Crowhurst said he had seen many of the cases referred to by Mr. Hunting in the matter of young horses which had been used for the plough, and they soon got well after a little careful treatment.

Mr. W. S. Carless, after expressing the pleasure he had had in listening to the paper, said he had had an interesting case of a thoroughbred yearling filly, galloping against a tree and displacing her shoulder. She was under his care for 5 months. and during that time, she was fomented and blistered, and also allowed a little exercise. The other day he saw she ran second at Manchester. A good many people saw her, but he did not think there was anything beyond the displacement of the muscles. She was in Leader's stable and he believed that now one shoulder was as good as the other.

Mr. Tbigger said that Mr. Hunting had laid before them a most interesting dissertation, but he thought there was little left for him to add. Shoulder lameness was somewhat rare, and would only occur once where foot lameness might occur 40 or 50 times. As to the pain to the horse while examining, he thought that depended upon whether they gave the shoulder an outward twist or not. He thought that dragging of the limb posterior to the other was one of the best symptoms. The rounded action was, he thought, diagnostic of knee lameness rather than shoulder lameness. After citing one or

two illustrative cases, the speaker went on to refer to the cow, which, he was afraid, was beneath Mr. Hunting's dignity.

Mr. HUNTING: Above my intelligence (laughter). I know nothing about them.

Mr. TRIGGER said it might interest them to know that luxation was a very common thing in cows, and the cases were very distinctive. They made the most absolute recovery, the treatment consisting of embrocation or a blister, the great thing being that the cow is to be kept tied in her stall and not allowed to move. There were also cases of neuralgic lameness, either directly or indirectly, and he called to mind the case of a grey mare, which was sometimes lame and sometimes sound, according to occasion. He believed it entirely arose from the nerves under the shoulder joints. A pony of his own evinced the same symptoms, suffering at times unmistakably from some sort of shoulder lameness. Regarding the blunder which Mr. Hunting said he once made, he thought it only illustrated to them how easy it was to make a mistake.

Mr. A. GREEN said he saw plenty of rough work, and shoulder lameness was nothing fresh to him. He remembered very well a case of dislocation of the shoulder which occurred to a canal horse, near Smethwick. It had fallen into the water, and being an old horse was destroyed, rather than the expense should be incurred in the matter of treatment. He also remembered a case in a cow, which was caused by "revelling." He had known cases of disease of the bone, and when that acquired a chronic form, the slaughterhouse was necessary, the extreme pain to the animals not justifying their being kept alive.

Mr. WARTNABY said it was always a pleasure to them in the Midlands to have a visit from their professional brethren in London. He had little to add to the discussion hen in progress. He agreed with nearly everything Mr. Hunting had said, and particularly with his statement that it was difficult to locate the seat of the injury in shoulder lameness. He found it very difficult in some cases to decide whether the lameness was really in the shoulder at all. He shared Mr. Hunting's opinion that pressure of the fingers in some cases was not a diagnostic guide, although in other cases, of course, that was. He proceeded to mention an interesting case of shoulder lameness, where, he thought, the trouble must have been of a nerve character. He had himself a high-couraged cob, and an assistant drove him out one day for about 30 miles. She suddenly dropped dead lame. He (the speaker) thought it strange, and at first blamed the assistant, thinking she would be months before she got round, but to his astonishment she was nearly better the next day and on the day afterwards quite better. This happened many time when she went on a long journey, and in the course of a few hour's rest, she would be

sound again. With regard to those cases designated shoulder slip, he agreed with those gentlemen who attributed it to ploughing. He had seen a good many cases in plough horses, nearly always young animals, and it was generally the furrow horse. He agreed also with Mr. Trigger that those cases were very marked in the cow. There was lameness in the shoulder the cause of which Mr. Hunting had not touched upon, and that was rheumatism. He himself had had several cases. With regard to the case which Mr. Hunting had related wherein, after fomenting the shoulder the trouble manifested itself in the foot, he (the speaker) must plead guilty to a similar error, and he now always examined the foot very carefully as well as the shoulder. He once knew a case of shoulder lameness follow poll-evil, and he wondered whether the affections had anything to do with each other.

Mr. Jones mentioned several cases bearing upon the subject which he had seen. He once went to examine a cow with a dislocated shoulder, and it had a speedy and marvellous cure. Being brought out, she ran round the yard like mad, and in about ten minutes put her own shoulder in.

Mr. Crowhurst said that the remarks of the previous speaker about rheumatism brought to his mind the case of a horse he had, which had a most acute attack of rheumatism in the left shoulder. It was treated, and the rheumatism shifted round to another place, a cure being ultimately effected.

The Chairman, in winding up the discussion, said he took the opportunity of thanking Mr. Hunting for his extreme kindness in coming before them with such an interesting paper, and he hoped he would be gratified with the discussion which had taken place. There was little left for him to add. Nearly all their cases of shoulder lameness were treated on the negative principle. They got nothing positive to go by, and simply because there was no external sign, they came to the conclusion that it was shoulder lameness. He thought many cases treated as such were never shoulder lameness at all. Regarding the suggestion that the patient while under treatment should be kept perfectly still, he believed the muscles would waste from inaction rather than from anything else. Respecting the mistakes made by veterinary surgeons, he thought they ought to examine every case in the foot. He was speaking from experience, and he had been far more careful in examining cases of lameness since what once happened to him with a very valuable cart mare.

Mr. Hunting replied. He said that Mr. Parker's case of dislocation should clear up any doubts he may have had as to such a lesion taking place, but it would have given him stronger faith if it had not happened so long ago as 38 years. However, he would accept it as far as it went. Mr. Malcolm said he had a case answering the

description of the symptoms he gave as due to fracture of the first rib. Mr. Malcolm thought the lesion was sprain of the extensor muscles and that he proved his point by manipulation. When he drew the limb forward it caused great pain to the animal, which would be due to the stretching of the injured extensor muscle. But unfortunately in cases in which the rib had been found to be broken, precisely the same symptoms had followed the lifting of the leg, as he had described. Therefore this symptom was no proof of the correctness of his diagnosis. Then Mr. Malcolm thought that atrophy of the muscles was a further proof of the correctness of his diagnosis, but unfortunately, in cases shown by post-mortem to be due to fracture of the rib, atrophy also existed, and there was nothing wrong with the muscle in the early stages. He agreed with Mr. Malcolm that the wasting of the muscles was never completely replaced. There was a curious circumstance about the origin of cases. Mr. Malcolm thought his horses suffered in consequence of mis-steps through getting the foot in the soft ground. Now, in London, the cases which he (Mr. Hunting) had seen had nearly all been 'bus horses, and the history was nearly always the same. Either the horse had stumbled and nearly fallen, or he had started suddenly and stumbled, but in neither case was there an actual fall. Another circumstance worth noting was that the animals were always high-couraged ones. He never knew it occur in a riding horse, and he therefore wondered whether a collar might have something to do with it, at any rate he offered that as a possibility. Mr. Crowhurst referred to shoulder slip, and said he did not think those cases were accounted for by original nerve injury. If so, said Mr. Crowhurst, why did they recover? He (Mr. Hunting) was inclined to think that Möller was apt to classify shoulder injuries without sufficient evidence, but it did not follow that if a nerve were injured that nerve might not recover the same as any other structure. He proceeded to express his acquiescence in other speakers, and added that all illustrated cases to his mind were more interesting when followed by a post-mortem, at any rate he had stronger faith in his own diagnosis after a post-mortem than before. He was asked why he did not touch upon rheumatism. Well, the reason was that he never had a case in the shoulder and recognised it, although he accepted the case mentioned by one of the speakers where the disease shifted from one place to another as being undoubtedly rheumatism. As regarded Mr. Wartnaby's association of poll evil and shoulder lameness, he was inclined to think it was a co-incidence. He appreciated the meeting's kindness towards him in his endeavours to interest them, and if satisfaction were to be derived from a very complete agreement with the opinions he had advanced, he ought indeed to be satisfied. But he did not know that he was altogether satisfied, as he wanted to extract from them a little more that he did

not know. It was difficult to be perfectly sure of their diagnosis until after a post-mortem examination, but it was difficult to persuade owners, in the interests of science to have their animals killed, where there was a possibility of their recovering. It was all very well to theorise, but it was time, he thought, they had some arrangement whereby a practitioner's expenses could be defrayed in cases where he might hold a post-mortem for the benefit of science. Shoulder lameness was one of those things upon which post-mortems would throw a good deal of light. There were many other cases where a few pounds expended on the purchase of the horse and a careful post-mortem examination would add to our general stock of knowledge.

Mr. Malcolm moved a hearty vote of thanks to Mr. Hunting for his address, which was seconded by the Hon. Sec. and unanimously approved.

The President of the College.

The Chairman, at the close of the meeting, said :— Before we separate we ought to congratulate one of our members upon his promotion to a most enviable position. Mr. Trigger, as you are aware, has been made, since our last assembly, president of the Royal College of Veterinary Surgeons. We, as an association, are particularly proud of him in that capacity, for he was one of your nominees, and we trust that his year of office will be a thoroughly happy and successful one. I am likewise hoping that the Midland Counties will not only provide the president this year, but that one of our members hold the same position next year.

Mr. Trigger, by way of reply, said :—Your kind remarks have taken me by surprise, but as you have given me this opportunity I should like to acknowledge that the position which I occupy to-day dates entirely from the day I joined this association. From that day, probably 20 years ago, I have received greater kindness from this association than any merits of mine deserve. Since you did me the honour of returning me to the Council it has been my endeavour to give every attention to your interests and to the politics of the profession generally. I have not lightly undertaken the duties of president but I have done so with a great sense of their responsibility. I hope the profession may pull together. I was present at the examinations in Scotland, both at Glasgow and Edinburgh, and I was glad to see they are being carried on in a satisfactory manner. If the Council will only let the examiners alone we are on the eve of far more satisfactory times than we have had in the past. Very great changes have taken place, and now that things are getting into a good working groove, I hope they will be allowed to remain there. I think there is one matter which you will all have to consider, and that is the pecuniary position of the College. It is as much a matter

for the profession as it is for the Council. I think that if the College is to maintain the dignity and position it ought to maintain among other corporate bodies it should be a much richer body than it now is. Our sole income at present is from the students' examination fees. We can't save money; we can pay our way and that is the most we can do. I do think it is a question the profession should consider, and as there seems no other way of raising money to make our position better, I would suggest the payment of a small registration fee, say 10s. per annum by every member of the profession. If you consider that you will see what it means. We should soon be able to hold our own in everything that goes on, and if we are to maintain our dignity and be the progressive institution that we hope to be, we must have money to do it with. It will be the duty of the president to exercise no begrudging spirit so far as his own pocket is concerned, but that will not meet the difficulty, if you consider how small a thing it means. We now supply a Register at a dead loss, which means about £50 a year, but if every member paid a registration fee of 10s. per year, we should in a few years be an immensely richer body than we are to-day. We should be in a position to give scholarships, and take a leading part in all scientific matters, which at the present time we cannot possibly do. We cannot bleed the students any more—we have now reached the utmost limits in that direction. I invite you to think over what I have told. If as I have suggested we could adopt a small annual registration fee, it would not harm anyone but would be an immense source of benefit to our College.

Next Meeting.

The Chairman asked the meeting to decide where the next quarterly gathering should take place.

Mr. Jones proposed, and Mr. Over seconded, that it be at Leicester.

Mr. Trigger proposed, and the Hon. Sec. seconded, that the meeting be again held at Birmingham.

Mr. Malcolm and others took exception to the amendment on the ground that it was desirable, in the interests of the Association, to change the *venue* as much as possible.

Eventually, the amendment was withdrawn, and the original motion that the next meeting be held at Leicester was unanimously agreed to.

A vote of thanks, on the motion of Mr. Burchnall, seconded by Mr. Carless, having been accorded to Mr. Gooch for his services in the chair, tea was partaken of in an adjoining room, after which the members dispersed.

H. J. Dawes, *Hon. Sec.*

NORTH OF SCOTLAND VETERINARY MEDICAL SOCIETY.

The summer meeting of this Society was held in the Bon Accord Restaurant, Market Street, Aberdeen, on Saturday, August 29th. The President (James Thomson, Esq.) occupied the chair, and there were also present Messrs. McGregor, Howie, Morrison, Mellis, Wood, McPherson, McDonald, McBryde, Anderson, Marsden, Barron, Sievwright, Dawson, Young and Skinner. Messrs. Cameron, Berwick-on-Tweed; and Thompson, Edinburgh, attended as visitors.

The minutes of the previous meeting having been read and approved and the roll called, Mr. Paterson, M.R.C.V.S., Cluny, was, on the motion of Mr. McGregor, seconded by Mr. Howie, unanimously elected a member of the Society.

The circular letter from the Southern Counties Veterinary Medical Association bearing on exemption of veterinary surgeons from serving on juries and on the inadequacy of fees paid to veterinary surgeons when giving evidence in criminal cases was read.

After some discussion it was resolved that the Southern Counties Veterinary Medical Association be supported in its resolution so far as it applies to exemption from serving on juries.

Mr. Young, M.R.C.V.S., Dundee, read a paper on "Tuberculosis and Tuberculin relative to Public Health," in which he expressed the opinion that more cases of tuberculosis arose in the human subject through the ingestion of milk from tuberculous cows than from the ingestion of tuberculous flesh, provided the latter was properly cooked. He also gave some interesting statistics bearing on the development and spread of tuberculosis.

Mr. Wood, M.R.C.V.S., Turriff, read a paper on "Catarrhal Pneumonia in Irish Calves," in which he very fully described the symptoms and pathology of this disease, as also the line of treatment pursued by him. Discussion having been invited on these papers,

Mr. Barron intimated his approval of Mr. Wood's treatment of catarrhal pneumonia by ammon. carb. and other stimulants, but so far as tuberculin was concerned his experience was nil.

Mr. G. Thompson, Edinburgh, spoke at some length on tuberculosis, and from numerous autopsies of cattle condemned through the tuberculin test which he had witnessed, he felt disposed to question the veracity of tuberculin as a diagnostic aid.

Mr. Mellis, Inverurie, stated that in a considerable number of cases tested by him the temperature rose to a degree much in excess of that usually seen in pronounced

cases of tuberculosis as shown by the aid of tuberculin in other hands.

Mr. Anderson, Keith, considered a temperature of 104 to 105° Fah. as being the most characteristic of the disease.

Mr. McBryde, Stricken, was of opinion that all breeding stock should be submitted to the tuberculin test with the view of eradicating tuberculosis.

Mr. McPherson, Huntly, expressed the opinion that the mode of treatment of catarrhal pneumonia presently advocated was very unsatisfactory, and referring to tuberculosis he considered that the tuberculin test ought to be made compulsory in every herd of breeding stock.

Mr. Cameron, Berwick-on-Tweed, on being invited to express his opinion stated that in his district catarrhal pneumonia in calves was not at all prevalent. Regarding tuberculosis he thought the public were too apathetic, and he would urge on every veterinary surgeon the necessity for making every enquiry and representation anent this dire scourge.

Mr. Morrison, New Deer, also spoke on tuberculosis, and thought highly of the administration of terebene in the treatment of catarrhal pneumonia.

Mr. McLaren, Brechin, recommended ol. terebinth and ol. lini. as being very efficacious in catarrhal pneumonia.

Mr. Paterson, Cluny, was in favour of the administration of terebene by inhalation through the medium of hot water in catarrhal pneumonia.

Mr. Howie, Alford, had been successful with stimulants.

Mr. Skinner, Old Meldrum, made a few remarks on tuberculosis and catarrhal pneumonia.

The President, in retiring, made mention of the pleasure experienced by him during the two years he had been in office and of the able assistance rendered him by the members and officebearers, towards rendering the meetings of the Society successful; he wished the Society every success in the future.

The following gentlemen were unanimously elected officebearers for the year 1896-97. *President*: W. Anderson, Fife Keith. *Vice-presidents*: G. Barron, Echt and Adam Sievwright, Tarland. *Secretary*: W. Skinner, Old Meldrum. *Treasurer*: A Wood, Turriff.

At the close of the meeting the members dined togegether in Mollison's Restaurant.

Wm. Skinner, *Hon. Sec.*

BORDER COUNTIES VETERINARY MEDICAL SOCIETY.

A general meeting of the Society was held at the Bush Hotel, Carlisle, on Friday, the 4th of September. Mr. J. Armstrong, F.R.C.V.S. Penrith, President of the Society occupied the chair, and there were also present: Mr. H. Thompson, Aspatria (treasurer); Mr. Carlisle, Mr. McKie, Mr. Hewson (secretary), Carlisle; Mr. Garnett, Windermere; Mr. Croudace, Haltwhistle.

The SECRETARY read a letter from Mr. Donald, Wigton, F.R.C.V.S., stating "that he could no longer remain a member of the Society after the proceedings of last meeting," and adding that "perhaps the Chairman would explain to the meeting his acceptance of motions which were contrary to all precedent and opposed to establish regulations and settled practice."

Mr. GARNETT said Mr. Donald had had a motion on the agenda paper for several meetings, and at last meeting, not being there to move it and not having deputed anyone to move it for him, the meeting were quite justified in negativing his request for it to be again held over.

Mr. THOMPSON said Mr. Donald had returned the circular he sent him regarding his subscription for the current year, and had written on the back of it "I am not in the enjoyment of members' privileges and must respectfully decline to respond to the request." He felt very sore and sorry about this because Mr. Donald was the first man to take steps to form the Society. Along with his (Mr. Thompson's) late son, they fought hard to get it established, and with the aid of Mr. Carlisle, and himself they succeeded. He could not understand Mr. Donald taking umbrage in this matter. He had had all the privileges enjoyed by other members. (Hear, hear.) He considered Mr. Donald a good member, and he was very sorry he was not present to-day. Mr. Thompson went on to allude to the poor attendance of town members at these meetings. He himself had supported the Society to the best of his power, and had spared neither time nor money to keep it afloat; and if members who did not attend took umbrage at the present office bearers he would tender his resignation as treasurer at next meeting, and he hoped the Secretary would do the same, and let the two offices go into one hand, but he would do his level best to support the Society.

The PRESIDENT said he did not understand the meaning of Mr. Donald's communications. He was there to be called to order if he had acted contrary to precedent. He challenged anyone to say so. Why did not Mr. Donald come to that meeting and back up what he had said. There was another thing. Once upon a time the Society enjoyed the privilege of having two members on

the Council. Now they had none. So far as Mr. Thompson was concerned he would say nothing. He fought the battle of a good man. What did Mr. Donald do? When he thought he had a chance of becoming an examiner he threw it up, and never said once that he was going to retire from their representation.

Mr. Mckie suggested that the Secretary write to Mr. Donald asking him to reconsider his decision. Mr. Croudace seconded the motion which was agreed to.

Service on Juries.

The Secretary read the circular letter from the Secretary of the Southern Counties Veterinary Medical Association, Southampton, with regard to the exemption of veterinary surgeons from jury service and to the question of fees as witnesses in courts of law.

Mr. Garnett said it was certainly a desirable thing, though as to getting an Act of Parliament as suggested, he did not know whether that would be requisite. He would like to support the Southern Counties all they could.

Mr. Thompson said it appeared that the subject had been brought before the Council, and they had replied that they could not see their way to do anything in the matter, recommending an appeal to the Local Parliamentary representatives. This method of treating so common-sense a question by the Council was considered to be an argument in favour of a National Veterinary Association. He thought it was by the aid of societies like this that such things were to be brought about. Their object was to benefit the profession generally and not single individuals.

Mr. Carlisle said exemption from jury service was attempted many years ago, but not successfully.

Addresses of Sympathy.

Addresses of condolence on family bereavement were adopted by the meeting and signed by the President and Secretary, for presentation to Mr. Carlisle on the loss of his daughter, to Mr. H. Thompson, Aspatria, on the loss of his daughter, and to Mr. Jos. Pears, Penrith, who during one year lost three daughters, whose ages ranged from 21 to 33.

On the motion of Mr. Hewson a similar address was presented to the President, whose mother died a short time ago.

New Members.

Mr. Hewson nominated Mr. James Spence Smith, Aspatria, as a member of the Society.

X Rays and the Horse's Foot.

Mr. Thompson said he had the pleasure of seeing a demonstration of the X rays at the Melrose meeting, and what gratified him most was to see the application of the rays to the foot of a horse, the photograph showing that

the nails in the horn took from an outward to an inward direction. This was gratifying to him on account of a little "tiff" he had, the particulars of which he brought before the last meeting.

Cases of Umbilical Hernia.

Mr. Thompson speaking on this subject, which was introduced by the President at last meeting, said the two cases which Mr. Armstrong then brought forward were rather unique, and showed that opening into the abdomen was not such a very serious matter as they used to think. How many thousands of horses, cattle, sheep, dogs and cats, were castrated when young ; the opening was made into the abdominal cavity yet all seemed to do well. But Mr. Armstrong's cases went further, an opening being made into the intestines. One grand feature about them was non-intervention. In the principle portion of these cases as long as the animal will feed, and show no constitutional disturbance, let well alone, and don't interfere. It was astonishing what nature would do. Whereas if you began to wash and interfere, possibly the case would terminate fatally. He once saw this well exemplified in a case of hernia of the brain in a young groom, who had been pitched off a horse and kicked on the side of the head ; a portion of the convolution of the brain came through the opening on to his ear for an inch and a half. He was carried home and put on a mattress. The doctor (Dr. Jones) would not allow him to be undressed, and would not let them touch the piece of brain or even sponge off the blood. The owner of the horse was so sympathetic that he would touch the young man's lips with some brandy and water on a feather. He immediately went into convulsions. Great care had then to be used, and within a few days the brain gradually receded, and went nicely back into its place, and a splendid recovery resulted which was due to non-intervention. He was like Macbeth in reference to physic—"I'll have none of it."

The President said he had little to add to what he said at last meeting on this subject. He tried to show them what Mr. Thompson had now advanced. The advantages of non-interference, cleanliness, and antiseptics.

Mr. Thompson : I did not say cleanliness and antiseptics, I said non-intervention.

The President added that he agreed with some of Mr. Thompson's remarks, but not with all.

Paper by Mr. H. Thompson.

Does the Council of the R.C.V.S. as at present constituted represent the profession? with some anomalies of the Council.

As an ex-Councilman and one that was blackballed at the last election I venture to say that the Council as at

present constituted does not represent the profession.

On examining the Register of 1896, the total number of the profession is 3179, estimated as follows :—

England - -	2043
Scotland - -	347
Ireland - -	303
Wales - -	91
Foreign Parts -	203
The Army - -	192
	3179

These are represented on the Council Board by 32 members or about one to every 99, and if a proper electoral division was made the representation would be something like the following :—

Middlesex	241	members	$2\frac{1}{2}$	representatives
Lancashire	202	,,	$2\frac{1}{2}$	,,
Yorkshire	291	,,	3	,,
Rest of England	1309	,,	13	,,
Scotland	347	,,	$3\frac{1}{2}$	,,
Ireland	303	,,	3	,,
Wales	91	,,	1	,,
Army	192	,,	2	,,
Foreign	203	,,	2	,,
	3179		32	

Now how are we represented? Referring to the names of those on the Board, as at present formed, there are no less than ten of them living in London or about one-third of the whole Council, three of whom are teachers at the Camden Town Veterinary College, so that it may almost be said that the Council represents London and the Royal Veterinary College.

Lancashire has three members from Manchester alone, Yorkshire has two representatives, while Ireland has only one lay Councilman, and two of the Scottish colleges are represented by three members from the teaching staff, while Glasgow College and the lay members of Scotland have no representation at all; the army is also well represented.

Now, gentlemen, should this state of things exist? I say no! and I again repeat what I said at Penrith at our meeting on 13th March last, that the profession will not be properly represented until we have electoral divisions and members of Council paid for their services. It can hardly be looked for, a country practitioner leaving his work for two or three days and paying his own expenses to and from London four or five times a year, and it is only by agitation that these reforms can be brought about. This and all kindred societies should take the matter up and refuse to support candidates for the Council Board unless they will endeavour to bring about this legislation. But from the experience we had at the

last election it seems to me that the members of the profession generally pay little attention or care very little about veterinary politics, this was well exemplified when the anonymous circular with the large black lines through some of the retiring members names was so well responded to, it showed pretty well the state of knowledge of the profession on veterinary politics.

It was a splendid electoral dodge on the eve of filling up the voting papers, and this was said to be done in support of higher education, while those men who were black-balled were saddled with being against it, and were sent to the right-about for sticking to the bye-laws even when supported by counsel's opinion—they were as much in favour of the higher education as those on the other side who professed to be its great supporters.

If bye-law 52 did not fulfil the requirements, notice of motion should have first been given to have it rescinded, and not amended, and another put in its place, but as long as it remained on the Register it would have to be followed.

On referring to the Register it will be found that bye-law 52 and the first schedule had to be read together to be understood. The bye-law said "that students who enter the veterinary schools shall, prior to their first professional examination of the Royal College of Veterinary Surgeons, produce to the secretary of the R.C.V.S. one of the certificates specified on the first schedule."

Now the first schedule contains the names of 21 examining bodies in England, Ireland, and Scotland and a certificate from any one of these admits the student as a pupil to the teaching schools, but there is no mention in the bye-laws about how many times the candidate had to sit for his certificates.

It would be a bit of presumption on the part of the Council to dictate to anyone of the examining institutions how they had to conduct their examinations, and I think it can hardly be said that the great storm in the teapot was due to these certificates. From what I can gather the great commotion was owing to students who had no certificate from any of these institutions and had to pass a matriculation examination in general education prior to their first professional.

Now I have searched the bye-laws through and cannot find in any part of them where the Council of the R.C.V.S. says that a student shall pass any matriculation examination; it may be a minute, but it is not in the bye-laws. Is this an oversight of the Council? Some of the teaching schools include the matriculation examination in their prospectuses and advertisements and name the subjects which the candidates are likely to be examined in—is this by order of the Council?

Bye-law 52 as recently altered reads "Students who enter veterinary schools *shall* prior to their first professional examination by the R.C.V.S. produce a certificate entitling the holder to be registered as a medical

student." Note the word *shall*. Why cannot the Council make a bye-law for a matriculation of its own and state the subjects to be covered in the syllabus? This examination would have to be passed by all students who could not produce an equivalent certificate, and by these means what is required of a young man entering College would be distinctly understood by all.

This I think would put an end to the chopping and changing, the bitterness and unpleasantness that has lately clouded the horizon of veterinary politics. What has to come of the self-educated men? as a rule they generally make the best men! I say let us have free trade in education. No matter how or when a man gets his education if he satisfies those men who are selected and appointed to examine him.

With reference to some of the anomalies at present carried on at the Council Board, on glancing through the Register I was surprised to note bye-law 25. "That there has to be three trustees of the body corporate to be elected by the Council *and shall not include the treasurer.*" Now Mr. Wragg is one of the trustees as well as treasurer. How is this? Again bye-law 29 *The Council shall annually elect at their first meeting two auditors etc.*" Was this done at the first meeting this term?

I was at the last meeting of the last term and the auditors were then elected on the motion of the treasurer. I asked the meeting if that was in order when Professor Pritchard got up and said he considered it out of form, and he nominated the auditors, but neither the Professor nor myself were reported or taken notice of.

Again bye-law 48 "The treasurer shall be responsible for the preparation of the "balance sheet." Yet Mr. Wragg is reported to have said in answer to Mr. Hurndall at the last annual meeting "That he was not responsible for the balance sheet." Mr. Wragg is a personal friend and I have every confidence in him, and feel certain he will be the first man to have these matters put right, he can only have accepted the offices without reading the rules.

If the bye-laws are made for the proper conducting of the work of the College on business lines let them be adhered to or rescinded if not suitable, and substitute those that are. The above shows how little the old members of the Council board know or care about some of the regulations.

It may be asked why I did not call attention to the subjects when on the Council. First, it takes some little time to get your bearings and know the members of the Council? Second, outsiders living at long distances from any of their colleagues with no one to consult on the subjects to be brought before the board find that when they get to London matters are nearly all cut and dried and they themselves almost powerless. Third. The time of the Council is also often taken up with long speeches,

the principal portion of which being foreign to the business before the meeting, proving and fending this, that, and the other, and introducing personalities, etc.

Gentlemen, this was well illustrated in *The Veterinary Record* of August 15th wherein was a long article by Professor McFadyean and replied to by Mr. Hunting. I must say it is a fair good specimen of my experience of the Council Board. All personalities &c. should be left on the door step on entering the building.

There is another matter I wish to allude to and that is bye-law 13 which says "All resolutions carried at the meetings of the Council except such as relate to the bye-laws shall be acted upon without further confirmation." Yet after certain resolutions have been agreed upon in committee and passed at the general Council meeting, another meeting is called in 14 days after for their confirmation or otherwise, this I find in accordance to the working of the Charter of 1844, and the sooner it is altered the better.

Having pointed out some of the things which seem to be out of joint in the working of our governing body let me again say that I consider the remedy for these anomalies is a more thorough representation of the profession on the Council. I am persuaded that this cannot be brought about until we have electoral divisions. The town, the country, and the army sections of the profession would be fairly and proportionally represented. One other point, and this is the payment of compensation for time and services rendered. Second-class fare to and from London ought to be allowed each member, so enabling a country practitioner living several hundred miles from the metropolis to be present at the deliberations of the Council and its committees as often as those living within a few miles of Red Lion Square.

Mr. Carlisle said he concided with Mr. Thompson in all he had said. The London men had things too much their own way and did not pay sufficient attention to people at a distance. They made the laws and altered them to suit their purpose, and did not give country practitioners a fair chance. The subject should be looked into by proper authority.

Mr. Garnett said they must thank Mr. Thompson for bringing the question so fully before them. It was time they made a practical move in it, and the best thing would be to formulate a scheme for the representation on the Council according to Mr. Thompson's suggestion. There should be equal electoral districts returning a fair proportion of members. This was more the work of a committee than of a single individual, but once the subject was ventilated he felt sure that it would be taken up by the large body of country practitioners who, when they went to London on Council business, had to devote two or three days to business that occupied the London men only a couple of hours. (Applause.)

The President agreed with Mr. Garnett and said they

should have a re-distribution of seats. Not long ago they were represented by two members on the Council, now they had not even one.

Mr. Garnett moved that Mr. Thompson bring the subject up again in the form of a scheme for the re-distribution of seats, and this was agreed to.

INTERESTING CASES.

By Joseph W. Hewson, M.R.C.V.S., Carlisle.

Open-joint in a Mare.

History.—On July 5th a gentleman came and asked me for a bottle of lotion for a mare which had been kicked on the inside of her hock. I advised him to have the mare seen to, as from the description given of the wound it was evidently in a dangerous position and likely to result in open-joint. He, however, did not think it necessary for me to see the mare then, and left promising to send word if she grew worse. On July 9th I had an urgent message sent to attend, and on examination I found it to be a severe case of open-joint.

Treatment.—My first care was to have the mare put comfortably in slings, and have cold water applied to the joint for two hours night and morning, after which the leg was dried and a little of caryophylli applied directly to the wound with a brush. This treatment was continued until the 11th when a strong blister of ung. hydrarg biniodid was applied right round the hock joint. At this time the discharge was a mixture of synovia and pus, having a curded appearance.

Within a few days the discharge ceased and the wound apparently healed up, but unfortunately the discharge again occurred soon afterwards, with the same appearance as before, but in much greater quantity. The mare was kept as quiet as possible in slings and in four or five days the discharge again ceased.

On August 9th I found the hock very much swollen and very painful, I considered it best to fire and re-blister. This was done, and the mare turned out to grass three weeks afterwards. She was run out until the latter part of October when it was found that the hock was permanently anchylosed in a flexed position so that the leg was no use to her, being too short. I advised the owner to have her destroyed. This was done, and I have the hock in my possession. (Specimen shown.)

I may state that the unfortunate ending of this case was due to it being neglected until such an amount of inflammation of the bones had set in that it could not be combatted. My prognosis was very unfavourable from the first. I notice the peculiar nature of the discharge as indicating a destructive or ulcerative process going on in the joint.

Parturient Laminitis.

This was a case in a mare which had foaled but retained the placental membranes for about 10 hours, when they were removed and the womb syringed out with a weak disinfecting solution. Fearing that the case might develop into laminitis a small dose of quinine sulph. was administered.

Twelve hours after removing the placenta I was sent for, as the mare was showing signs of acute laminitis. On my arrival I found the mare to be suffering acute pain in her fore feet, standing in that position peculiar to laminitis, and almost unable to move. She was very feverish, temperature 106F., pulse about 80 per minute and breathing hurriedly ; the mucous membranes were of a reddish yellow colour, with a slight fœtid discharge from vagina.

Treatment.—I had the shoes removed and hot linseed poultices applied to feet ; half drachm doses of quinine were given every eight hours for 48 hours, during which time the acute symptoms passed off, leaving the mare very lame. Cold water poultices were then applied for about a fortnight, when I had her feet dressed, good broad round shoes fixed on, and a strong blister applied round the coronets of both feet.

Soon afterwards she was turned out to grass and a blister re-applied. She improved slightly but never was able to work, and consequently she was destroyed. I obtained one of her feet which shows great absorption of the anterior portion of the os. pedis. The result of pressure from the exudation. (Specimen shown.)

A Decomposing Fœtus.

At the time the mare was due to foal she made full preparations but showed no signs of actual labour. Gradually the symptoms passed off, and no more notice was taken of her for about a fortnight, when a discharge was noticed coming from the vagina. This continued for about a week, when I was consulted. On examination I found the os uteri partly dilated with a breech presentation. As the mare still showed no signs of labour I drew the tail of the fœtus into the passage and left her, with instructions that I was to be sent for immediately she showed any signs of paining.

Twenty-four hours after this I was sent for and now found the os completely dilated and labour commenced. On attempting to remove the fœtus I found it to be very much decomposed, the hair coming off when touched. As I could not alter the position or raise the hind legs into the passage I immediately got to work to remove the limbs from the body. This done I got the foal away with a great deal of difficulty, and on examining for the placental membranes I found they were only represented by a filthy liquid, which I removed as best I could and washed out the womb with antiseptic. The mare was

very much exhausted and in my opinion not at all likely to get better. Mild stimulants were administered to her and she was carefully nursed. On my visiting her next day I found her to be very much improved, but on the following day she developed a very acute attack of weed in her near hind leg. This was treated much in the usual way, and the mare made a good recovery.

This case seems to me to be of great interest as showing the length of time a mare may carry a foal after it is dead, as no doubt this foal had died when the mare first prepared. Septic absorption had doubtless been prevented by disunion of the fœtal membranes from the womb.

A Case of Colic.

This yielded to ordinary treatment inasmuch as the mare got relief from pain, afterwards passing a large quantity of urine. Immediately upon this she began to strain as though she still wished to urinate. This paining became excessive, and had continued for several hours when I was sent for. On examination per rectum I found what I at first thought was the bladder much distended, but on more careful examination I found it was a portion of the bowel distended with gas which had evidently rushed into the seat of the bladder after the latter had discharged its contents. This in my mind was the cause of the symptoms already described, by pressure on the neck of the bladder. I at once inserted a fine trocar and canula through the wall of the vagina into the distended bowel, and liberated the gas; then gave a small opiate, and all signs of uneasiness ceased. A few hours afterwards I found the mare all right. This case is of interest as showing the very great benefit derived from the use of the trocar and canula in cases of severe tympanitic colic.

Discussion.

The President said Mr. Hewson had opened up a field for argument and in doing so had not tried to exhibit only his abilities, as he had given them cases which were failures.

Mr. Thompson said everyone of the subjects were interesting, and good practical subjects, which they met with almost daily. One of them alone—open joint—was quite plenty for an afternoon's discussion. They generally found that the small external openings were dangerous internally, and that in order to treat open joint successfully they should be called in early. He had great faith in continuous cold water applications for 36 or 40 hours, or even for 5 days. He had an irrigation tube on purpose. Failing that he applied a smart blister, but as for creosote or antiseptics, etc., he did not believe in. With reference to the case of parturient laminitis, he would not allow a cleansing to remain inside a mare more than four hours. Many people believe in using antiseptics

and washing the womb out twice a day. Too frequent a use of antiseptics causes irritation of the mucous membrane. He believed in washing the womb once with clean water and then the only antiseptic he used was an ounce of tincture ferri mur. and a gallon of water. In some cases of septic laminitis, if the animal was very fat, it ran on to such a degree that the septic material caused gangrene of the laminæ and killed the patient in a very short time. The case of colic described by Mr. Hewson was an interesting one, and his treatment was bold and heroic. They were too slow at times in introducing the trocar. He had on several occasions tapped through the rectum rather than through the side. He thought this was good surgery ; and he complimented Mr. Hewson on the way he handled the case. The whole of the cases were practical, and they could not do better than fall back upon them for discussion at next meeting.

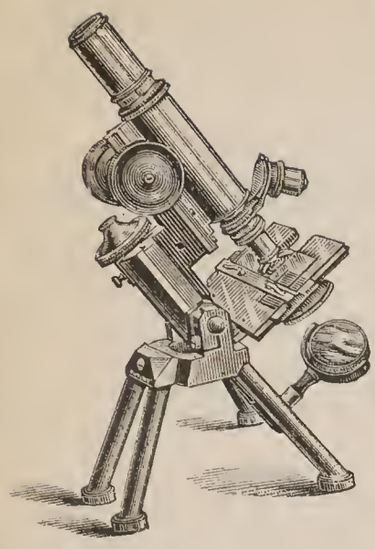
The PRESIDENT undertook to open the discussion on the five subjects at next meeting.

Mr. CARLISLE observed that hardly two veterinarians would treat these cases alike. In a bad case of open joint he put the animal into slings and took care that it was not disturbed, as perfect rest was essential. They should not allow over long a time to elapse before putting on a smart blister. It would disturb the animal, but he had often most success from that treatment than from anything else. It was a difficult thing to get an external application to the opening to act beneficially. If ever ulceration commenced it defied their treatment, whatever they might do.

Mr. GARNETT seconded the motion for the adjournment of the discussion, which was agreed to. He added that he wished to bring forward at next meeting an outbreak of gloss-anthrax which took an epidemic form.

It was agreed to hold the next meeting on the second Friday in December.

A vote of thanks to the President moved by Mr. Garnett and seconded by Mr. Croudace concluded the meeting.



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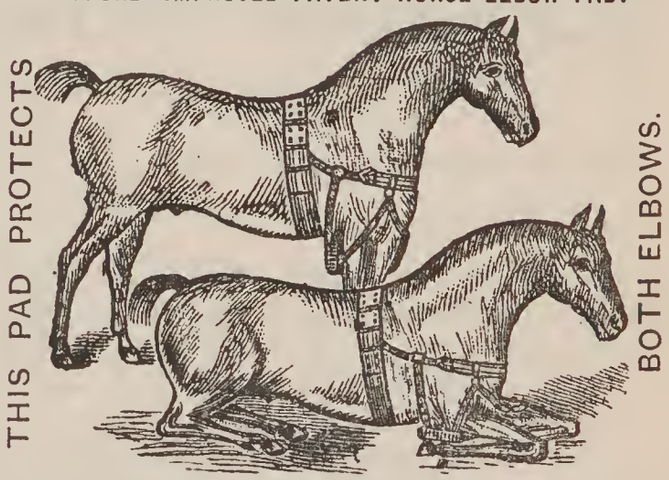

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